

1975

Metalogical foundations for inductive sociological reasoning: a preliminary study of the descriptive act

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METALOGICAL FOUNDATIONS FOR INDUCTIVE
SOCIOLOGICAL REASONING: A PRELIMINARY
STUDY OF THE DESCRIPTIVE ACT.

Iowa State University, Ph.D., 1975
Sociology, theory

Xerox University Microfilms, Ann Arbor, Michigan 48106

Metalogical foundations for inductive sociological
reasoning: A preliminary study of the descriptive act

by

Dan Lee Tweed

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Department: Sociology and Anthropology
Major: Sociology

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

For the Major Department

Signature was redacted for privacy.

For the Graduate College

Iowa State University
Ames, Iowa

1975

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CHAPTER I. A THEORETICAL INTRODUCTION TO THE PROBLEM OF DESCRIPTION

Every theory of knowledge must start from knowledge as a given sociological fact. The system of knowledge as it has been built up by generations of thinkers, the methods of acquiring knowledge used in former times or used in our day, the aims of knowledge as they are expressed by the procedure of scientific inquiry, the language in which knowledge is expressed--all are given to us in the same way as any other sociological fact, such as social customs or religious habits or political institutions. The basis available for the philosopher does not differ from the basis of the sociologist or psychologist; this follows from the fact that, if knowledge were not incorporated in books and speeches and human actions, we never would know it. Knowledge, therefore, is a very concrete thing; and the examination into its properties means studying the features of a sociological phenomenon.

Hans Reichenbach (1938:3)

Some Preliminary Remarks

In order to understand this dissertation one must first be cognizant of the fact that this work is meant to reflect two fundamental purposes. First, it is meant to serve as a basic record of my thoughts, however insufficient they might be, at one point in my continuing intellectual development; a public statement of what I feel to be true as a result of the particular sequence of experiences that I have encountered throughout my educational career. Secondly, this dissertation is meant to be an expression of an antecedent personal commitment to two areas of substantive focus; and to

my overarching commitment to the principle that there is much to be gained from their conjoint investigation and theoretical integration. These areas are the sociology of language and the methodology of sociology.

In light of these two purposes, the aims of this introductory chapter are threefold. First, it is necessary that I outline the core aspects of my approach to these two areas and state why I feel that these areas might be of critical interest in contemporary sociology. Secondly, I wish to articulate the manner in which these two areas seem to naturally converge. At this point of convergence lies the value of their theoretical integration; a point at which we can employ knowledge in one area to better comprehend the nature of the problems existing in the other area. Finally, I wish to propose the manner by which I feel that the necessary integration can begin.

One last point should be noted, however. This thesis is a methodological one and is, to that extent, somewhat asymmetrical with respect to the direction of integration. In the context of this dissertation the sociology of language is primarily meant to provide a vantage point from which a key problem in the methodology of sociology might be viewed--the problem of description. Thus, while I may discourse on the sociology of language (SOL), the goal is not to simply inform the reader about SOL as a substantive

area, but rather to "construct" the necessary vantage point. From such a vantage point we may more clearly view the core problem of description; observe the elements of the logic of description; and begin to more effectively determine the role of descriptive systems in "inductive" modes of sociological theorizing (cf., Glaser and Strauss, 1967).

I am, of course, very cognizant of the fact, even given the fundamental asymmetry of the theoretical development commented on earlier, that this dissertation is only a meager beginning with respect to the valued integration. At a later point, when the problem itself is more clearly grasped, the upper bounds of this work (i.e., the extent to which it is delimited) will be defined more precisely. In part, I can only hope to show the value of such an endeavor and point out one direction in which it might extend.

The Methodology of Sociology and SOL:

Toward a Cybernating Sociology

Percy W. Bridgeman (1959:1) once noted that the problem of understanding was two-fold in nature. First, "there was the problem of understanding the world around us" and secondly, "there was the problem of understanding the process of understanding, that is, the problem of understanding the nature of the intellectual tools with which we attempt to understand the world around us." For the sociologist the

first of these problems translates into the problem of understanding the social facts which confront him, ordering them, interrelating them, and by the means at his disposal, fitting them into the broader context of the societal complex from which they were felt to derive. These are all critical aspects of understanding that entity we term "society." Complementing this problem, and corresponding to Bridgeman's second problem of understanding, is the concern for the tools with which we confront such social facts; a concern for their quality, validity, operative principles, and so on. Alfred North Whitehead (1971:3), a man of incredible insight into the problems of scientific knowledge, addressed the first of these problems as being concerned with "thinking 'homogeneously' about nature". With respect to the second problem he noted, "Of course it is possible to think of nature in conjunction with thought about the fact that nature is thought about. In such a case I shall say that we are thinking 'heterogeneously' about nature" (Whitehead, 1971:3). It is the task of the methodologist to think heterogeneously about nature; to keep one eye on the task and one eye on the tools. It is this task to which I currently aspire.

For the most part this dissertation arose out of a concern for the role of measurement and stochastic modeling in the production of meaningful and usable sociological

knowledge. Soon, however, I found that I had to broaden my methodological horizons. The rate of development of new techniques in the areas of ethnography, sociolinguistics, social ecology, social geography and many other areas (plus their obvious utility in many applied settings) led me to believe that the task of the methodologist was an ever expanding one. There was a definite need for an "encompassing" methodological perspective. After some two years of directed study, however, I found that the traditional "text-book" approaches to these topics, particularly as represented by contemporary texts of sociological "theory construction", did not seem to provide a sufficient basis for the generation of a generic methodology, ultimately an epistemology, which could be used in an assertive and creative manner by students of society. A multitude of considerations led me to believe that such a methodology must display several characteristics.

First, cognizant of the diversity of perspectives in contemporary sociology (and of the intrinsic validity of the principle of the autonomy of inquiry; Kaplan, 1964:3), any such methodological perspective must be an integrative one; capable of articulating, in a nontrivial way, the close-knit kinsnip of the entire gamut of existing methodological techniques. It must strive toward a systematic apology within which the apparent, or "surface" variety of

methodological techniques can assume their appropriate places: a surface variety as given in the multitude of techniques in mathematics and statistics; the ethnographic techniques of contrastive analysis (Conklin, 1968:414-433) and discourse analysis (Schegloff, 1972:75-119; Labov, 1972:120-169); and the classical method of ideal differences or the Gedankenexperiment (Isajiw, 1968:43). All of these are valuable tools which are available to the working sociologist. If he is to have full access to them, and the insights they can bring, they must be placed in some appropriate perspective. It is this perspective which an integrative methodology would seek to create.

By nontrivial I mean that such a perspective must be more than simply an apology. It must accomplish more than the construction of a classification system for pigeon-holing particular methodological techniques. Such endeavors only preserve and reify current distinctions where it might be more useful to notice continuity and structural isomorphy; they maintain the methodological status quo when meaningful change might be required. Further, because of their reliance on existing techniques as "data", such systems have a two-fold destiny: 1) they have increasingly procrustean effects upon user's perspectives during the period of the systems application, and 2) they are doomed to obsolescence.

The existence of an integrative, nontrivial methodology must make a difference; it must have consequences. Placed in the pure pragmatic context, we can put any such methodology to the following ideal test. We can imagine two states of affairs, one in which the methodology exists and one in which it does not. If methodological activity is indifferent to these two states of affairs, then the methodology proposed is a pragmatically trivial one; its existence makes no difference.

Secondly, an integrative methodology must be cognizant of the fact that, from beginning to end, empirical sociological research is a sequence of decisions; theoretical, observational, and inferential. Hans Reichenbach (1938: 9-16) has pointed out that such decisions are of three sorts:

1. Conventions, or choices between alternative means of accomplishing the same end,
2. Volitional bifurcations which lead to divergent perspectives and practices, and
3. Entailed decisions, or decisions which are made, or implied by some set of predecessor decisions. "The system of knowledge is inter-connected in such a way that some decisions are bound together; one decision then, involves another, and though we are free in choosing the first one, we are no longer free with respect to those following" (Reichenbach, 1938:13).

Following the pragmatic theme of the earlier discussion, a nontrivial methodology must display consequences at points

of decision; it must make an input.

Following up on this last point, then, we may note a third and final characteristic of an integrative methodology; namely, that it must be of a normative nature. In essence, this means that as members of a scientific community, some decisions are entailed by the very fact of our membership. This does not mean the reduction of all research behavior to ritualized modes of inquiry; that is if "ritual" is understood as an unthinking and personally meaningless act. On the contrary, the emphasis is on developing the creative potential of the sociological community. We must begin to realize that there are many ways in which the collective sociological enterprise extends beyond the individuals who comprise it. The import of this consideration becomes most clear when we come to questions of the "meaning" of research; for at this point the "we" of the scientific community partitions into "researcher" and "peers". Meaning is a public possession (see Geertz, 1973:12) and even a superficial awareness of this fact can simplify many otherwise complex decisions.

Having now established a set of criteria by which such a methodology can be judged, we must now seek a positive course towards its accomplishment. This is where SOL makes a great contribution. If asked why a student of methodology should find interest in the area of SOL, I should have to

offer the following reasons:

1. The scientific community is, perhaps, the single greatest consumer of man's symbolic capacities. That this is so has been pointed out by such eminent social scientists as G. A. Lundberg (1964), Harry Alpert (1938:855-861) and Robert McGinnis (1970:37-38), as well as being the main thrust of the logical positivist and pragmatic movements in scientific philosophy.

2. Through the study of SOL the student of methodology stands to gain a sense of proportion from an increased awareness of the role of symbolic systems in the larger context of society; the context from which the scientific community draws its human, organizational and symbolic roots. In terms of this increased awareness, then, the student of methodology stands to gain a sense of perspective concerning the role of symbolic systems in the scientific community. The reader may wish to note that Chapter I is concerned with the development of these first two items. The following items will be dealt with in later chapters.

3. Through the study of SOL the student of methodology stands to gain an increased sense of awareness concerning the relation of the specialized symbolic systems used in the scientific community to the natural language systems used in the larger societal complex. There has been an unfortunate tendency for this distinction to be overdrawn, particularly

by groups on either side of the qualitative/quantitative issue. A major task of this dissertation is to show that this distinction has been overdrawn, structurally, functionally, and without recognition of their basic interdependence (that is, structurally with respect to their syntactic/semantic composition, functionally with respect to their pragmatic setting, and with respect to the asymmetric dependence of the specialized upon the natural system).

4. Through the study of SOL the student of methodology stands to increase his own capacity for the rational use of the symbolic systems in research endeavors; develop clear understandings of the role of symbolic tools in concrete areas of research application; and develop a stronger appreciation of his responsibilities in their use. Since the methodologist stands in a critical relation to the rest of the social scientific community, his awareness of these factors is strategic and vital.

In summary the use of symbolic systems can either provide us with blinders or it can open and extend our horizons. Language is our central tool in the scientific community and we must neither take it for granted nor be inordinately awed by it. The effectiveness of a tool is defined in terms of its use and is determined by its user. If the tool is to be used more effectively--if the tool

itself is to be improved--then increasing the user's awareness of its nature must be the first order of business. The study of SOL is superbly suited to this end.

The intent of the following section, and its various components, is to begin to construct the SOL vantage point that will be required throughout the rest of the thesis. This will be accomplished in three stages; each stage providing information for its sequel, and each successively focused with respect to its role as a means to the ends of this dissertation. Figure 1.1 has been constructed to show the conceptual flow of Chapter I. Here each section is given both sequential and conceptual coordinates and an attempt is made to graphically represent points of convergence.

The Sociology of Language:

Constructing the Vantage Point

The contemporary student of society can find a myriad of reasons, intellectually "pure" and intellectually "applied", for pursuing the study of human language systems. In this section I will attempt to outline, in brief, three broad and sequentially nested areas of interest to sociologists today. The first three, being introductory with respect to the substantive area, seeks to provide a broad outline of the field, noting its internal diversity,

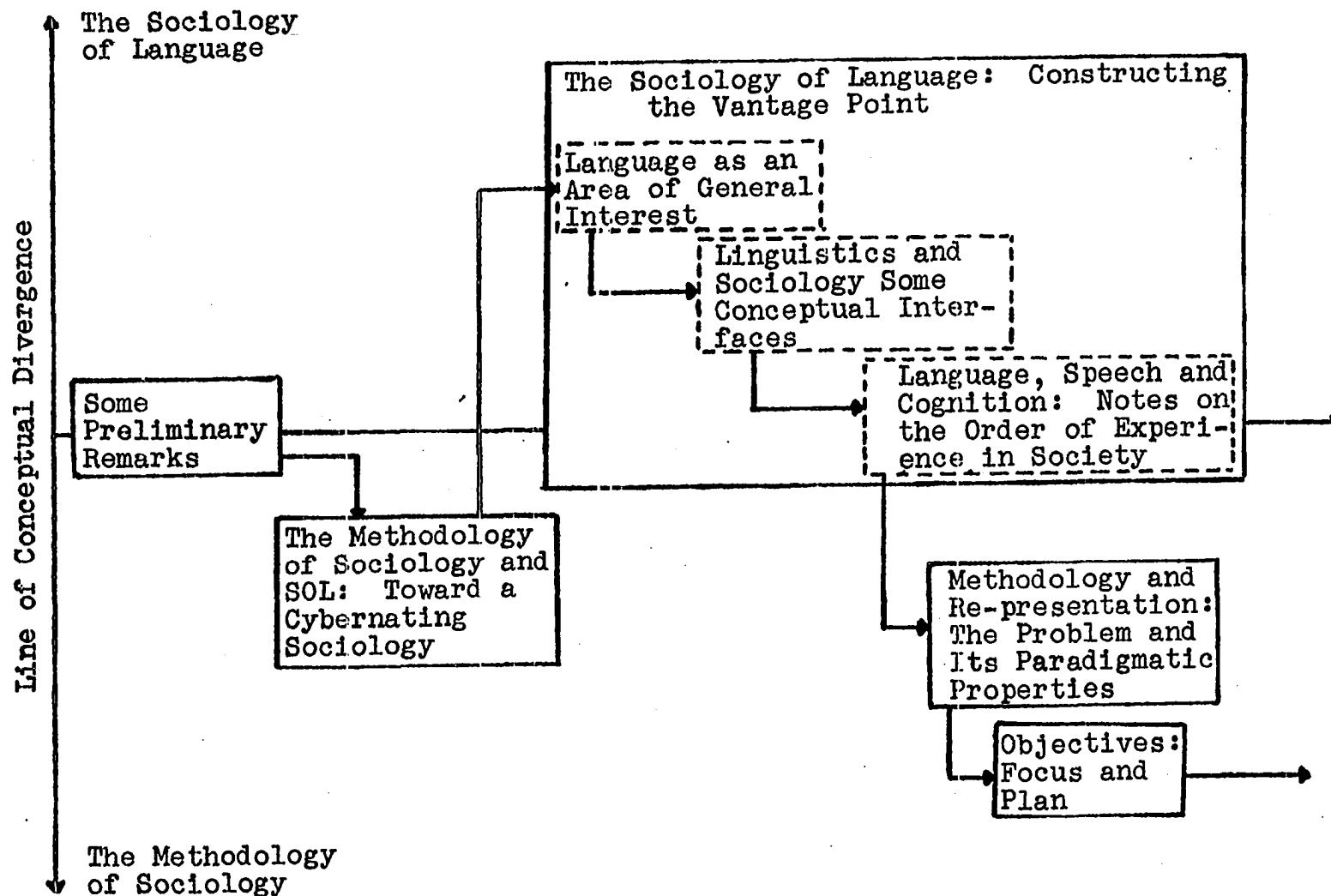


Figure 1.1. Constructing the vantage point: A representation of the sequential and conceptual coordinates of the major sections of Chapter I

academically, theoretically and in application. In the second and third areas we will begin to focus on areas of direct interest in this dissertation. The second, having to do with the actual and potential impacts of the study of linguistics upon the study of society, seeks to provide some key concepts with which we may pursue the third and final area of interest; language and social cognition.

Area I: Language as an area of general interest

For understandable reasons few aspects of human conduct have engendered as much intrigue as the human capacity for language acquisition and use. As Beechhold and Behling (1972:76) have noted, "Although linguistics as a science is relatively new, man's interest in the nature and origin of language date back at least as far as antiquity." Logicians and philosophers, of course, have always had an intense interest in language and its impact on human reason. Aristotle's Metaphysics and Plato's Cratylus attest to the longevity of this concern, while the more recent works of Rudolf Carnap (1937: 1967), Yehoshua Bar-Hillel (1964), Hans Reichenbach (1966), Jaakko Hintikka (1970a:3-27, 1970b:263-297), and Jack Kaminsky (1966) display the vigor with which contemporary logic has proceeded into the detailed study of linguistic systems; often engaging in analysis of a definitively sociological interest (see Searle, 1965:221-239;

Austin, 1962). Today the study of the various aspects of human language systems is progressing at an unprecedented rate (largely spurred by practical concerns) and seems to be transcending all academic boundaries. Beyond the interests expressed by philosophers and logicians, a great deal of research is being pursued by physicists, biologists, psychologists, anthropologists (who have probably played a larger role in shaping the nature of contemporary linguistics than any other group) and engineers.

The need for sociolinguistic research On the applied side of linguistics the need for a comprehensive theory of human language is expressed by groups equally as diverse as those who study language. Most importantly, however, almost all these needs reflect the necessity of a sociolinguistic approach. The concern for the improvement of reading and speaking skills, as well as the concern for the development of more capable and rationally creative individuals, has led educators in modern societies, such as Postman and Weingarten (1966; 1969), Beechhold and Behling (1972) and others, to a strong conviction concerning the central position of linguistic teaching in modern education.

In the less developed countries of the world, educators and politicians alike are facing problems in language planning with almost a total absence of usable knowledge of the mechanisms of language (see Fishman, 1968:3-16). Most

of these countries, particularly in Africa and Asia, confront the problem of modernizing linguistically (and culturally) heterogeneous populations. This is their legacy, as Jyotirindra Das Gupta (1968:17-25) and John H. Kautsky (1973:113-118) have pointed out, from a previous experience under colonialism.

The long drawn succession of developmental sequences, which brought different social problems to prominence at different times in European history, is largely absent in Asia and Africa. In these areas the challenge of modernization requires the telescoping of several stages of development into one single stage. In addition, few countries belonging to these areas had escaped the imposition of artificial colonial boundaries whereby diverse cultures, languages, religions, and social forms were lumped together under colonially convenient administrations.

The logic of colonial convenience was obviously unconnected with the logic of cultural, linguistic, or social congruence of the artificially juxtaposed groups. And yet many of these new nations are continuations of these artificially administered units (Das Gupta, 1968:18).

Faced with the problem of such linguistically and culturally diverse population elements, politicians and planners are confronting the two-fold task of creating both "nationism" (or the creation of conditions which lead to simple national viability; ecological, economic, social and political) and "nationalism" (as a feeling of national identity); with nationalism basically being viewed as the means toward nationism (Fishman, 1968:3-16, 39-51; Das Gupta,

1968:17-26; Rustow, 1968:87-106). Towards this end national language policies and plans have been developed which have generally encouraged three processes in language planning (Ferguson, 1968:27-35):

1. Linguistic Standardization or the selection and reinforcement of a particular language (or dialect) as the national language and as a symbol of national unity,
2. Linguistic Graphization, or the creation of written linguistic forms, generally phonetic alphabets, which may then be used to produce a "literate" populace,¹ and
3. Linguistic Modernization, or the creation of specialized subvocabularies and standardization of forms of discourse (such as mail correspondence).

These three processes interact to support and reify each other; theoretically that is (cf., Sapir, 1949:147-170). Beyond the rather prototypic nature of these endeavors, and the lack of usable knowledge concerning these processes (Neustupny, 1968:285-294), it is generally the case that the educational institution becomes the major device for implementing language policy in less developed countries. This presents problems for the education planners involved, which far exceed those experienced by educators in modern societies. A broad range of questions must be asked before the

¹In this regard it is interesting to note that developing nations face not only the problem of producing literacy, but also of choosing the language in which literacy is to be pursued.

efficacy of such programs can be fully evaluated; such as the relation language to culture and ecological adaptivity; such as the impact of populaces on the flow of information, and subsequently on the diffusion of modernizing concepts; and, finally, of the impact of graphization itself upon the basic mechanisms of cultural continuity (Goody and Watt, 1973:311-357). Language is instrumentally linked to culture, and culture to adaptive capacity. Culture is an ecological device (Wilkinson, 1973; Cohen, 1968:40-60) deeply rooted in human institutions and collective patterns. The question is whether such language planning can be pursued without creating more institutional trauma and populace peripherization than is already occurring. All of these point to the need for a stronger development in the area of the sociology of language. Unfortunately, however, the development needs of less developed countries are immediate and we must face the truth of Durkheim's (1965:479) statement that

Science is fragmentary and incomplete; it advances slowly and is never finished; but life cannot wait. The theories which are destined to make men live and act are therefore obliged to pass science and complete it prematurely. They are possible only when the practical exigencies and the vital necessities which we feel without distinctly conceiving them push in advance, beyond that which science permits us to affirm (Durkheim, 1965:479).

Other areas of possible application of knowledge of

sociolinguistic origins are in the areas of: translation, the creation of writing systems (graphization), the design of "humanized" architectural facilities, etc. Anyone doubting the breadth of interest or application of linguistic theory and research should consult Colin Cherry's (1970) integrative work, On Human Communication: A Review, a Survey and a Criticism. I will of course, be specifying another area of application very shortly.

Theoretical directions in SOL As Dell Hymes (1974) pointed out in his text, Foundations in Sociolinguistics: An Ethnographic Approach, the development of modern SOL has been that of an interdisciplinary hybrid, essentially arising out of reactions to the various myopias produced by academic specialization; myopias which become critical at points of application. The result of this form of theoretical development is a very loose and diverse conceptual system with little theoretical integration. Such conceptualization and integration is the next step. Several rather traditional distinctions in the field can be noted here which may be fruitful later.

The first of these distinctions is merely a consideration of the role of time, or process, in language study. It is traditional, following Hertzler (1965:12-13) and de Saussure (1966:79-81) to distinguish between those studies which are "static" in perspective and those which are dynamic

or "historical". Presumably a static perspective is one which looks at language phenomena at one point in time, along the "axis of simultaneities", or as involving "the relation of coexisting things" (Hertzler, 1965:12). A historical perspective, on the other hand, would take into account a succession of linguistic forms along the "axis of succession" (Hertzler, 1965:12). More realistically, however, we may find two types of perspectives which do approach language statically. First, there are those studies which do, in fact, examine a language at one point of time. Secondly, there are those studies which seek those attributes of languages in which time is presumably not a factor; these often termed the "universals of language" (Greenberg, 1968). The classic works in linguistics and logic may be seen to fall into this category (see Kaminsky, 1969:3-16). The approach taken, however, is to a large extent determined by which aspect of language one is studying. For instance, studies in phonetics and lexicography are somewhat bound to historical perspectives; often searching for that Edward Sapir (1949:147-170) has termed linguistic "drift". Studies in grammar and syntax (of which logic would be a special concern), by comparison, are more prone to studying their phenomena as relatively static and resistant to change (Hertzler, 1965:140-176).

Another distinction which has been made in linguistics

is between those perspectives which concentrate on the "internal" aspects of linguistic phenomena, and those which deal with them "externally". Internal linguistics, static or historical, is concerned with the internal structure of language only; the major concern being syntactic or the relations and patterns that hold between the basic components of the language system. On the side of externalistic linguistics we have those studies which consider the relation of the language to factors outside the language system. For matters of convenience we may further distinguish between those externalistic approaches to language which deal with traditional semantics, or the classical question of meaning, and those which deal with the relation of language to a broader "extralinguistic" environment.

In this last category we may further identify those approaches which are of an "ecological" perspective (largely examining the relation of language, and its components, to a larger physical setting in which it is found) and those which are of a "pragmatic" perspective; those which take the language users into account. At the intersection of the ecological and pragmatic perspectives lies the foundation of sociological and anthropological interests in language. Here we find the key studies in communication networks, and the study of regional and situational distribution of linguistic varieties (the former being geographical linguistics). Also,

at this point we find the intriguing studies into the area of diglossia in multilingual speech community (Fishman, 1972:91-106; Valdman, 1968:313-326).

More importantly, however, it is at this critical intersection, with a critical emphasis upon the pragmatic context of language, that we meet the most theoretically salient distinction in SOL; that between speech, as a human activity embedded in a site and situation (Nystuen, 1968:40), and language as an independent system transcending particular speech acts and embeddings. This critical distinction was most prominently made in the works of the French scholar Ferdinand de Saussure (1857-1914); particularly in his classic text, Course in General Linguistics (1966). Drawing much inspiration for his theoretical program from the work of Emile Durkheim (see Douglas, 1973:11), de Saussure went on to make the tripartite distinction between langage as the term covering all aspects of human linguistic communicative activity; langue as the system of symbols used in communication (the medium) and existing independent of the volition of the individual speakers; and parole as the individual act employing the langue for communicative purposes. I will discuss these concepts in greater detail in later sections. As Hertzler (1965:11) has noted, these terms have, in the process of their translation into English, been merged into the two: language and speech. Although, as both Douglas

(1973:11) and Hymes (1974:6) have noted, most linguistic scholars have long since deviated from the Durkheimian intent of de Saussure's theoretical program (the development of a comprehensive semiological theory), there is no doubt of the impact of this distinction in modern linguistics. For instance, it finds a fundamental reflection in Noam Chomsky's distinction between linguistic "competence" and linguistic "performance" (Chomsky, 1965:4). For the most part we may also note that this is a key distinction in the works of modern students of SOL; the concern being, not primarily for language communities, but for speech communities (Hymes, 1974).

In this section I have attempted to introduce some key "sensitizing" concepts upon which future students of SOL will build, and also to specify the general directions from which the sociology of language has come. Indeed, one may already spot some salient trends in modern linguistics which shows the impact of sociological considerations. The first is the increasing tendency to note the impossibility of studying human language systems from a solely internalistic perspective (Oller, 1971:18-23). The second trend is towards a marriage of the three components of the externalistic perspective defined earlier. This is well illustrated in the following example from Hymes (1974).

Some divorce linguistic form from context and function. An old but apt illustration is found in Bloomfield's often cited remark that, if a beggar says "I'm hungry" to obtain food, and a child says "I'm hungry" to avoid going to bed, then linguistics is concerned just with what is the same in the two acts. It abstracts, in other words, from context. In contrast, an influential book has characterized pragmatics in a way exactly complementary as "all those aspects which serve to distinguish one communication event from any other where the sign types may be the same" (Cherry, 1961:225). It abstracts, in other words, from linguistic form (Hymes, 1974:5).

At further points in this dissertation, we shall pursue another area of integration necessary for the comprehension of the function of language and speech: namely that every act of speech has two systematically interrelated components to its semantic environment; a linguistic environment finding only an implicit realization in the speech act, and an extralinguistic (traditional semantic, ecological and pragmatic) environment, both of which are essential to its interpretation.

SOL is a distinctly interdisciplinary endeavor at this time, and this serves to enhance its already intriguing nature. However, in terms of the practical and theoretical challenges which are manifesting themselves in this arena, it is clear that a greater amount of conceptual and theoretical development is going to have to be produced. Sociologists must increasingly bring their theoretical expertise (particularly at the "macro" level) to this substantive area.

Area II: Linguistics and sociology: Some conceptual interfaces

Some fifty years ago Marcel Mauss, a nephew and intellectual colleague of Emile Durkheim,¹ wrote: "Sociology would certainly have progressed much further if it had everywhere followed the lead of the linguist..." (Mauss as quoted in Levi-Strauss, 1963:31-32). In a similar vein the social anthropologist, Claude Levi-Strauss noted:

Linguistics occupies a special place among the social sciences, to whose ranks it unquestionably belongs. It is not merely a social science like the others, but rather, the one in which by far the greatest progress had been made. It is probably the only one which can truly claim to be a science and which has achieved both the formulation of an empirical method and an understanding of the nature of the data submitted to its analysis. The linguist will often find scientists from related but different disciplines drawing inspiration from his example and trying to follow his lead (Levi-Strauss, 1963:31).

Both these quotes are very suggestive; yet they leave the issue open as to how sociology might benefit from linguistic works. In this section we will briefly explore some conceptual interfaces that are apparent in the two disciplines. This will be accomplished by first examining two social scientists who have adopted strategies from linguistics,

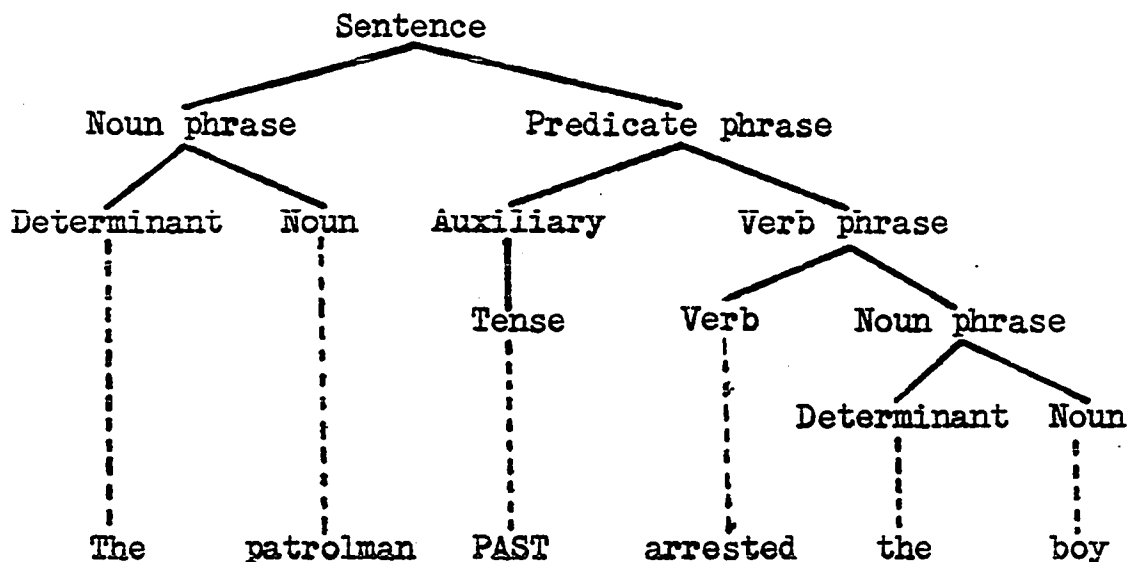
¹Although Durkheim and Mauss wrote various articles together, perhaps their most classic joint endeavor is incorporated in Primitive Classification (1972), a work originally published in 1903.

and then attempt to draw some conclusions of our own. Simultaneously, we will introduce some concepts which will be useful throughout the rest of this manuscript.

One reason for examining scholars who have been influenced by linguistic theory is simply that linguistic theory is not a homogeneous entity. Theoretical development in linguistics has been marked by "prominent schools" at different stages of its evolution and the choice of school will certainly have an impact on the interface to be exploited. In order to facilitate the explication of this point, we shall briefly examine the works of the anthropologist Levi-Strauss and compare them to the works of the sociologist Aaron V. Cicourel. In choosing these two scholars, I have, of course, omitted many other works which might also have served. Examples are; the monumental work of Kenneth Pike's (1967) text, Language in Relation to a Unified Theory of the Structure of Human Behavior; the work of Philip Bock (1968:212-222; 1969), and others (for instance, see Alf Ross', Directives and Norms, 1968). The two works chosen, however, are strategic in their differences, and the clarity with which their differences may be portrayed.

Levi-Strauss and structural linguistics In his text, Structural Anthropology (1963), the text from which the proceeding quotations were extracted, Levi-Strauss

begins the development of an anthropological perspective based on linguistic theory; structural linguistics to be exact, in the tradition of N. Troubetzkoy (see Levi-Strauss, 1963:33), Leonard Bloomfield (1933) and the methodical Zellig Harris (1951). A critical aspect of the structuralist doctrine (linguistic that is) was the elimination of meaning as a central facet of linguistic analysis. Instead, the emphasis was placed upon strict sentential analysis characterized by "Immediate Constituent" analysis (a mode of analysis running parallel to the search for "quarks" in modern atomic physics) and bracketing or tree diagram approaches to sentence structure. In essence this meant the assignment of "structural descriptions" to observed sentence forms. Sentences were broken down into their "immediate constituents", i.e.,



Reading such diagrams downward, sentences were broken down into noun phrases and predicate phrases; noun phrases were broken down into nouns, adjectives determiners, etc. At a lower level the "word" lost its place as the atom of language. In the structuralist program words which could be divided were broken down into smaller components termed "morphemes". Such morphemes could be further analyzed into "free" morphemes, "bound" morphemes. Similar tactics were applied at the level of phonation. The "sounds" of a language were analyzed into minimal units termed phonemes. Noting that certain characteristics of phonemes were modified by their placement in a phonemic chain, each phoneme was accorded certain allophones and so on, seemingly ad infinitum (see Denes and Pinson, 1973).

"Ascending" reading of such diagrams, however, gave the analyst a quite different interpretation; a sense of repetition and structure in the face of sentential diversity and thus lent themselves well to the analysis of the structures of languages from which the latter were gathered. (It should be noted here that the above illustration is representative of English sentence structure.) Thus, balancing the componential aspect of the structuralist approach was the concern for "systemsness" and simplicity at higher levels of analysis.

The structuralist doctrine found a definitive and

knowledgeable reflection in the anthropological formulation set forth by Levi-Strauss. Consider the following statement relative to one strategic aspect of social organization.

In the study of kinship problems (and, no doubt, the study of other problems as well), the anthropologist finds himself in a situation which formally resembles that of the structural linguist. Like phonemes, kinship terms are elements of meaning; like phonemes, they acquire meaning only if they are integrated into systems. "Kinship systems", like "phonemic systems", are built by the mind on the level of unconscious thought. Finally, the recurrence of kinship patterns, marriage rules, similar prescribed attitudes between certain types of relatives, and so forth, in scattered regions of the globe and in fundamentally different societies, leads us to believe that, in the case of kinship as well as linguistics, the observable phenomena result from the action of laws which are general but implicit. The problem can therefore be reformulated as follows: Although they belong to another order of reality, kinship phenomena are of the same type as linguistic phenomena (Levi-Strauss, 1963:34).

Thus, in the Levi-Strauss anthropological formulation,¹ the structuralist doctrine found its reflection in the search for social constituents, structural description, and most importantly, a reconsideration of the role of the unconscious manifestations of culture as contained in the organization of basic social institutions.

¹It should be noted that the impact of structuralist linguistics upon anthropological writings was felt prior to the Levi-Strauss formulation. Indeed, more "pure type" examples of adoption from the structuralist doctrine can be found in Kingsley Davis and W. Lloyd Warner (1937:291-313) and Ward H. Goodenough (1956:195-216).

Cicourel and cartesian linguistics Structural linguistics, after a long reign as the prominent school in linguistics, was to eventually be displaced by a new school, the groundwork of which was laid by a former Bloomfieldian, Noam Chomsky.

. . . Chomskyian linguistics rejects both the anti-mentalistic dogma of the structuralists and their insistence on rigorous, "objective" discovery procedures. Consideration of meaning are brought into linguistic proper, and conclusions about language operations may be arrived at by any means (including intuition and guesswork), their soundness determined not by the type of discovery procedures used, but by whether they "work". Language now will be studied as process rather than state (Beechhold and Behling, 1972: 91).

Perhaps the most important aspect of Chomskyian theory (which Hymes, 1974:121, notes as being a first step towards a sociolinguistic approach) is the two-fold emphasis upon pragmatics (i.e., constructed into Chomsky's theory is the notion of a speaker/hearer complex, both with certain competence attributes) and semantics, as is reflected in the deep structure/surface structure aspect of this "trans-formalist" perspective.

The phonological component of a grammar determines the phonetic form of a sentence generated by the syntactic rules. That is, it relates a structure generated by the syntactic component to a phonetically represented signal. The semantic component determines the semantic interpretation of a sentence. That is, it relates a structure generated by the syntactic component to a certain semantic representation. Both the phonological and semantic components

are purely interpretive. Each utilizes information provided by the syntactic component concerning formatives, their inherent properties, and their interrelations in a given sentence. Consequently, the syntactic component of a grammar must specify, for each sentence, a deep structure that determines its semantic interpretation and a surface structure that determines its phonetic interpretation. The first of these is interpreted by the semantic component; the second by the phonological component (Chomsky, 1965:16).

Further, with respect to the structuralist school of linguistics, Chomsky (1965:16-17) has made the following comments.

It might be supposed that surface structure and deep structure will always be identical. In fact, one might briefly characterize the syntactic theories that have arisen in modern structural (taxonomic) linguistics as based on the assumption that deep and surface structures are actually the same (cf., Postal, 1964a; Chomsky, 1964).

The central idea of transformational grammar is that they are, in general, distinct and that the surface structure is determined by repeated application of certain formal operations called "grammatical transformations" to objects of a more elementary sort. If this is true (as I assume, henceforth), then the syntactic component must generate deep and surface structures for each sentence and must interrelate them. This idea has been clarified substantially in recent work, in ways that will be described later For the moment, it is sufficient to observe that although immediate constituent analysis (labeled bracketing) of an actual string of formatives may be adequate as an account of surface structure, it is certainly not adequate as an account of deep structure (Chomsky, 1965:16-17).

Reflecting these Chomskyian tendencies in modern

"Cartesian" linguistics (Chomsky, 1966)¹ in modern sociology is the work of Aaron V. Cicourel. In his recent text, Cognitive Sociology: Language and Meaning in Social Interaction, Cicourel outlines a theory of social interaction which has basic theoretical parallels relative to Chomsky's transformationalist grammar. Of particular importance is Cicourel's distinction, paralleling the distinction between deep and surface structure, between interpretative rules (deep structure rules) and normative rules (surface structure rules) for role enactment in the context of given situations.

The actor must be endowed with mechanisms or basic procedures that permit him to identify settings which would lead to 'appropriate' invocation of norms, where the norms would be surface rules and not basic to how the actor makes inferences about taking or making roles. The basic or interpretive procedures are like deep structure grammatical rules; they enable the actor to generate appropriate (usually innovative) responses in changing situated settings (Cicourel, 1973:26).

The distinction between interpretive procedures and norms is tied to the difference between consensus or shared agreement and a sense

¹"The leading view of the nature of linguistic competence and creativity has been dubbed 'Cartesian linguistics' (Chomsky, 1966), not as an historically exact label, but in recognition of a direction given to theory of language in the period following Descartes by an emphasis on the native of the mind as prior to experience and an analytic, universalizing, reconstituting methodology" (Hymes, 1974:120).

of social structure. Interpretive procedures provide the actor with a developmentally changing sense of social structure that enables him to assign meaning or relevance to an environment of objects. Normative or surface rules enable the actor to link his view of the world to that of others in concerted social action, and to presume that consensus or shared agreement governs interaction. The shared agreement would include consensus about the existence of conflict or difference in normative rules (Cicourel, 1974:30).

In addition, corresponding to Chomsky's notion of linguistic competence, Cicourel has introduced the ramified notion of interactional competence.

In stressing what Katz calls the epistemology of linguistic descriptions and a theory of language, rather than performance (viewed as falling within psychology), Chomsky (1965:10) relies heavily upon 'acceptable utterances', or what I will call a 'normal form' of everyday usage, or 'utterances that are perfectly natural and immediately comprehensible without paper and pencil analysis, and in no way bizarre or outlandish.' The sociologist, however, must be interested in competence and performance that is essential for understanding everyday activities. Imputations of competence by members to each other and the recognition of this competence are integral elements of projected and 'successful' social action. Normal form social behavior is comparable to the notion of 'acceptable utterances' (Cicourel, 1974:44).

Other notions in Cicourel's cognitive sociology, paralleling those of the transformationalist (Cartesian) linguist, are the rather undeveloped concern for transformational rules (a component of syntax in Chomsky's theory) which would relate the interpretive structure (the deep structure) to the normative structure (the surface structure), and a

general concern for the "generative" or dynamic "constructive" aspects of ongoing social interaction (cf. Goffman, 1959).

Comments and conclusions concerning conceptual interfaces We have now briefly touched upon the works of two scholars who are similarly convinced of the value of the ramification of linguistic type theories into areas of sociological concern. What is of most interest at this point is the impact of the chosen linguistic theory for the developing social science extension. To better highlight these consequences a brief contrast among the previously studied "adopters" might be of value.

As an initial point of comparison we might first look at what each author has chosen as the subject of his investigation. Levi-Strauss has concerned himself with institutions (in this case the relational patterns evolving around problems of kinship) within societies, while Cicourel has dealt with actors and actions within situational contexts. While this can be partially viewed as a "surface" distinction, it is not entirely unconnected with other "deeper" points of contrast. A particularly salient point of contrast, here, is the role of the "conscious" in the various aspects of social structure (for both Levi-Strauss and Cicourel are concerned with the structural aspects of their respective subject matters).

On the one hand, Levi-Strauss encourages the reader to suppress the importance of consciousness in social structure, and there are many excellent precedents in the linguistic analog which would lead him in this direction. Most of us continually engage in the use of our language without the slightest conception of the multitude of phonetic and syntactic "rules" we unconsciously observe (Bock, 1969:23-46). As psychologist Charles E. Osgood (1968:190) has noted, "It would be safe to say that the lay user of a language is almost never aware of its grammatical structure, could not possibly describe its laws, and yet follows them faithfully." As a somewhat metaphorical extension into the Levi-Strauss schema, institutional structure is viewed as a phenomena which can best be described independent of individual will and volition.¹ Each society is perceived as generating a particular institutional structure from among those which are analytically possible. Somewhat as a consequence of this perspective a comparative, intersociety, approach is adopted as methodologically appropriate.

¹It is interesting to note, in this regard, that Levi-Strauss (1963:281-283) was fond of discussing the concept of a "collective unconscious" as distinct from the Durkheimian concern for the "collective conscious" (particularly in Durkheim's earlier writings).

In the approach of Cicourel, on the other hand, the actor (as this very term connotes) is a "wide-awake, grown-up man" (Schutz, 1973:208), planning and constructing acts in "interpreted" contexts. The actor is viewed as generating surface level activity from a deep level, "interpretive" base. Here again there are compelling linguistic precedents for adopting this approach. For while a good portion of speech, at the level of phonation and syntax, is at a low level of consciousness, another portion, at the level of semantics and pragmatics, does indeed rely upon the constructive and volitional aspects of individual existence. In this perspective Levi-Strauss would be said to be concerned with surface level manifestations of structure only. Finally, we may note that the method employed by Cicourel is that of the verstehen approach; or the method of sympathetic understanding (Schutz, 1973:48-66).

Now, employing our conceptual interface to the fullest, we may contrast these two approaches in the following way. For Levi-Strauss the social analog of the sentence (the object of analysis for both structural and Cartesian linguistics) is the institution and its author is society. This is quite in line with the methods of structural linguistics where every "well-formed" sentence is essentially viewed as being authored by the language in which it is

couched. Here the sentence is thoroughly abstracted from its pragmatic setting. For Cicourel, on the other hand, the sentence is action and its author is the actor; choosing and constructing within an interpreted setting.

Now, the results of this contrast can be viewed in many ways. First, however, let us return to the question of the impact of chosen linguistic perspective upon the developed sociological extension. It should be obvious that the choice from among the structuralist or Cartesian perspective does generate points of divergence in their ramified form. Given that a plethora of linguistic theories are currently being generated by a number of competent scholars, each with its own strengths and weaknesses, the choice of the theoretical analog becomes somewhat problematic.

This naturally leads us to consider the following point. Is sociological theory to be viewed as a mere extension of linguistic theory, or is linguistic theory a special case of a more general sociological concern? I believe the latter to be the case.

A linguistic code is a normative structure parallel to that composed of societal values and norms--indeed, it is properly considered as a special case of the norm if one allows for its cultural as distinct from a social, focus (Parsons, 1969:23).

There is much to be learned from linguistic theorists,

however, in terms of: the rigor of their analysis; the success with which they have formalized their perspectives (for instance, see Chomsky, 1965; Hopcroft and Ullman, 1969); the extent to which they have successfully employed computer technology; and most critically, the manner in which they have come to formulate the nature of their core phenomena; the speech act.

This brings us to a more substantial problem; one reflected in the strength of divergence of the two approaches contrasted earlier. This problem is in the relation between society and the individuals who (in living, reproducing, transmitting, and dying) compose that society. For approaches like that of Levi-Strauss, there is little room for the individual as an acting, volitional being. The individual and his activity are essentially crushed out of existence by something called society. In Cicourel's approach, on the other hand, one has to fight one's way out of situational contexts, or make rather giant "leaps of faith" to find society. To a large extent, society is only a twinkle in the actor's eye.¹ The disconcerting

¹This perspective, that of society having only noumenal essence in an "ego-relative" or "ego-centered" world, is a particularly pervasive perspective in sociology; especially since Weber's work (see, in particular, Weber, 1964:102-103). Its presence has almost uniformly been connected with difficulties in bridging the gap between the actions of individuals comprising the societal population and the society itself. This "strain" is particularly noticeable in the rather "partial" continuity existing in the transition from

question, then (a traditionally troublesome one) is whether or not the individual and societal "twains" will ever meet? It is at this point, I believe, that a careful study of linguistic formulations may one day provide a suggestive new starting point for the study of society. Unfortunately that day may be some time away. It does seem, however, that there are some "concrete" places in linguistic analysis where sociologists may begin their search.

It seems that an appropriate place to begin is the act of speech itself; the use of language. The act of speech is, to use a Durkheimian phrase, a "social fact" par excellence;¹ perhaps the clearest example of the abstract

Parson's symbolic interactionist phase to his more "macro" AGIL perspective (see, for example, Scott, 1963:716-735; Dubin, 1960:457-466; Parsons, 1960:467-483). It is also rather well embodied in the formalization of the "macro vs micro" distinction itself, which seems to stand more as a tribute to the analytical problem than to any social reality (witness the various "fallacies" generated under this distinction). It seems that the ego-relative schema is a necessary one for sociology but it needs to be balanced by a more realistic assessment of the "sui generis" realities of society itself. Perhaps the only author in which any attempt to balance these perspectives is in the work of Alfred Schutz (1973). Unfortunately, his work remains highly incomplete and very few of his "followers" have pursued his "transindividual" perspectives of society (see, in particular, Schutz, 1973:10-19).

¹"A social fact is every way of acting, fixed or not, capable of exercising on the individual an external constraint; or again, every way of acting which is general throughout a given society, while at the same time existing in its own right independent of its individual manifestations" (Durkheim, 1966:13).

interface which bonds the human organism to the society of which it is a part. The act of speech is, at each point, an act of construction; the basic data which contemporary "Cartesian" scholars such as Erving Goffman (1959) and Aaron Cicourel (1974) use to illustrate the dynamic, on-going, volitional and problematic aspects of social interaction.

Yet, simultaneously, the act of speech displays the nature of the constraints that societies place upon their members. One may say, with the security of a mathematician, that the more we speak, the greater the constraint. For example, in the simple act of phonation any language "recognizes" (or "authors" in the structuralist perspective) only a small segment of those sounds, or phonemes, of which a human organism is biologically capable of making. Further, given that a language recognizes a basic set of phonemes, then, at the level of syllabification, any human language recognizes only a small segment of all combinatorially possible syllables which might have been constructed from the "given" phonemic basis. By the time we have reached the level of the simple spoken sentence, the constraints imposed by one's natural language are of staggering proportions (see Oller, 1971:38-19).

These constraints, as primarily syntactic and phonetic, operate at the more or less unconscious level of social

behavior. When we move into the "conscious" area of semantics and pragmatics (i.e., the speech act, as distinct from the act of speech¹) we find constraint heaped upon constraint. Not all messages carry the same meaning and the same message will not carry the same meaning to all audiences. One may sit in wonder, as Chomsky (1965; 1966; 1972) has done, at the "generative" aspects of language use; yet the socio-intellectual dual of Chomsky's "Cartesian amazement" should be the awesome awareness of the social constraint that the simple act of speech portrays. It is at this point that we meet one of the most puzzling conditions of human existence in society; at the intersection of volition and constraint. Here we can become aware that an individual in society cannot even verbally proclaim his individuality from that society without first proclaiming (perhaps only subconsciously) his dependence on the key instrument of social solidarity, i.e., language. Language is, to a large extent, the society in the individual.² And like society, language (and its use) is both

¹This distinction will be made more forcefully at a later point. For now let us suffice to note that the act of speech is one of articulation, whereas the speech act is one of communication.

²Relative to this point Erich Kahler (1968:14) has noted that ". . . we cannot sharply separate one level from another, we cannot confine ourselves to considering one level strictly apart from its subjacent and overlying ones. We do not live as individuals in society or in a nation as

the source of, and limits to, individual freedom.

Moreover, the concept of language itself epitomizes the notion of a social fact to an even greater extent. Language, it is obvious, is a way of speaking. Language, as opposed to the individual acts of speech which are composed in it, is the prototypic social institution as Ferdinand de Saussure (1966:10) and Joyce O. Hertzler (1965:69-99) have cogently pointed out. Through an awareness of this basic isomorphy between language and other social institutions, sociology may one day be able to move from its contemporary emphasis on social statics to a more definitive statement of social dynamics.

But this recognition, of the speech act as a social fact (and a social act) par excellence, along with an awareness of the prototypic nature of language as a social institution,¹ only brings us back to the original question

within an overarching, delimitable space. We are this society, this nation to a large degree; we form part of it, and it forms part of us, down indeed to our physical being. We are, all of us, any entity or being is, existing on different levels at the same time. Existence is a multilevel affair."

¹Here I concur with Bock (1969:vii) who notes that "there are valid and important analogies between the structure of language and that of the rest of human culture-analogies which follow from the fact that language is one of several cultural subsystems, all of which share the same fundamental characteristics. My attitude is not that linguistics will solve all problems. But I do believe that a careful examination of the relationship between language and culture will point the way to a conceptual framework capable of embracing all forms of customary human behavior."

of whether the gap between the individual and society can ever be more adequately bridged. Understanding the act of speech in its institutional setting would provide only partial insights into the problem. Here is the point where SOL, with its conjoint concern for the ecological and pragmatic factors constraining linguistic phenomena, can make its contribution.

In concluding this section several remarks are in order. In the final pages of this section I introduced the reader to two perspectives in linguistics; structural linguistics and Cartesian linguistics. I have attempted to show the truths that each of these contain and noted that they appear to be reflected in society. In the next section a third perspective will be introduced which Dell Hymes (1974:120) has termed "Herderian linguistics." This perspective, he has noted, is best understood "not as a historically exact label, but in recognition of a direction given to theory of language in the period following Herder (1744-1801) by an emphasis on language as constituting cultural identity . . ."; that is, as an expression of the essential (and trans-individual) constitution of the community of that language's use. Some notable scholars approaching the study of language in the Herderian tradition are Wilhelm von Humbolt (originally 1836; 1971), Franz Boas (1911), Benjamin Lee Whorf (1970), Edward Sapir (originally

1921; 1949) and Ernst Cassirer (1953a). A rather prominent sociologist also falling into this category is Emile Durkheim; particularly in his period at the Sorbonne (see Parsons, 1968:311-313). Durkheim's perspectives have come to be a particularly pervasive influence upon this dissertation.

An examination of the Herderian perspective is vital in two senses. First, it will allow us to examine the third and final area of interest; the impact of language upon cognition and experience within the context of society. Here I would like to show how the Cartesianism discussed in this last section can be "embedded" into the conceptual structure of the Herderian perspective to provide a more balanced approach to the study of SOL (cf. Hymes, 1974: 121-124) and to escape the confines the ego-centered perspective as discussed earlier. Hopefully this might suggest some new directions that could be pursued in SOL, and within which SOL might contribute to the general theory of society.

Secondly, as was graphically presented in Figure 1.1, this section represents the final stage of my "descent" into the area of the methodology of sociology, and hopefully nests the forthcoming sections in such a manner that the reader can feel some conceptual comfort in dealing with them. Whether or not I have succeeded in "setting the

stage" for the methodological perspectives to be offered later will soon be a matter of record.

Area III: Language, speech and cognition: Notes on the order of experience in society

As was just mentioned, it is perhaps the most characteristic feature of Herderian linguistics that it views the individual as being a precipitant of some greater universal (Hymes, 1974:122); particularly as represented by the sociocultural complex in which the individual is a member, and of which he is an expression. Society, within the Herderian framework, is viewed as constituting a reality, sui generis, and the individual is viewed as its extension.

Language in this perspective (one reflected in modern ethnoscienc; see Frake, 1962:72-85; Sturtevant, 1964:99-131), is viewed as a sociocultural index, a record of what the society has found to be important, and a determinant force in the experience of that society. In short, the language of the group is said to contain an expression of that society's world view, or Weltanschauung

The content, form and uses of the language of each community mirror its physical setting, what its members are aware of and concerned about, and what their vicissitudes and successes with it have been, including especially the level of technological development achieved. In fact, the language carries the definition of all situations; it is the dissecting agent by which the

structures, functions, processes, relations and factors of the general and particular world are laid bare. By means of it, all environments are objectified, and all the actions of the group or society are carried on (Hertzler, 1965: 35).

By far the most misunderstood and controversial aspect of Herderian linguistics is concerned with the manner by which this societal Weltanschauung is articulated with elements of individual experience and cognition. This concern has been formalized into the issues of "linguistic determinism" and "linguistic relativity" (see Cole and Scribner, 1974:41). Since sociologists tend to have some familiarity with the works of Benjamin Lee Whorf, it is both fitting and strategic that we start our investigation of this topic with a consideration of his most frequently quoted (and distorted) statement.

We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face: on the contrary, the world is presented in a kaleidoscope flux of impressions which has to be organized by our minds--and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way--an agreement that holds throughout our speech community and is codified in the patterns of our language. This agreement is, of course, an implicit and unstated one, BUT ITS TERMS ARE ABSOLUTELY OBLIGATORY: we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees (Whorf, 1970:213-214).

This is a strategic quote for many reasons. Most importantly, however, is the fact that, in this perspective, the institution of language is not merely a device of solidarity which bonds the members of a societal community together (and is thus a societal prerequisite as Parsons has noted, 1966; 1969:6-7). Language does much more than this. It bonds the societal community to its fragment of the physical universe and provides a key ecological tool for societal adaptation. Indeed, language to a large degree defines the "societal environment"; it operates as an environmental strategy with roots extending into instrumental forms of human activity.

Yet, how is this bond established? Through what mechanisms's are the "terms" of Whorf's agreement reached? Perhaps society constructs, from the substrate foundations of human plasticity, the cognitive "template" of which psychologists have been so fond (Neisser, 1967:46-52). Perhaps! It is apparent that many students of Whorf have adopted this interpretation; that of linguistic determinism (for excellent reviews see, Ervin and Miller, 1968:86-93; Fishman, 1972:155-170; Cole and Schribner, 1974:36-60; Brooks, 1971:31-60). I believe, however, that there is a much simpler, empirically more accessible, and theoretically more suggestive nature to the Whorfian agreement; namely the fact of the sociologically and physiologically determined

necessity of linguistically shared experience within the context of human societies, as entities extended in space and time. For only a small segment of any individual's knowledge originates within his personal experience (Durkheim, 1965:29-33; Schutz, 1973:13); the majority of our experience is linguistically vicarious, brought to us through the socially constructed conceptual filter which language provides. In a complementary fashion each individual in a society constantly finds himself linguistically "distributing" aspects of his personal experiences to other members of that society. What is important, however, is that this ongoing distribution and redistribution of a posteriori forms of knowledge occurs in a highly organized fashion and within a well-defined system of constraints. These shall be discussed shortly.

Before proceeding, however, the point must be stressed that it is not language per se which constructs the world for the members of a speech community, but its use. Properly stated, given two members of such a community, A and B, the question is not how language structures the experiences of A and B. More properly the question is how A uses available linguistic resources to structure B's experience of the world (and B, A's experience) in the absence of ostended availability. Our pragmatic obligation to the Whorfian agreement is by no means mysterious then. In the

course of sharing experiences which are not ostensibly available to "all parties", we either honor the terms of our linguistic contract or fail to meet our obligations. Whorf himself made this point clear. The impact of language upon human cognition does "not depend so much upon ANY ONE SYSTEM (e.g., tense, or nouns) within the grammar", he notes, "as upon ways of analyzing and reporting experience which have become fixed in the language as integrated 'fashions of speaking' . . . (Whorf, 1970:158). "We cannot TALK at all except by subscribing to the organization and classification of data which the agreement decrees" (emphasis added; Whorf, 1970:214).

This brings us to a very strategic point with regard to the nature of the interface between the societal Weltanschauung and individual experience. This interface is mediated by, of all things, individual acts; the seat of volition in society. At the heart of the Whorfian agreement lies the very core of Cartesian interest; the speech act, or as we shall call it in this informative function, the descriptive act. This variant of the speech act (as both a social act and a social fact) is viewed as lying at the conceptual intersection of Cartesian linguistics (with its concern for creative, generative and competence aspects of language use), and Herderian linguistics (with its concern for the manner by which the language institution comes

to impose the essence of society upon individual behavior and knowledge). This key conceptual intersection is portrayed in Figure 1.2.

To give sociological significance to this intersection, however, and to help find society in the midst of all these acts of volition (see page 38), we need to explore the system of constraints which operate upon such acts. To better understand the nature of these constraints we might first break the setting of the descriptive act down into a number of basic components:

1. The parties to the act, including a speaker and a hearer,
2. An experience to which the speaker only has access (i.e., which is differentially distributed among the parties) and which was antecedent to the act, and
3. The linguistic resources to be used to "construct" the description to be shared. These resources would include a lexical stock, a syntax according to which expressions could be constructed from the terms of the lexical stock, etc.

The descriptive act itself may be further analyzed into two component acts and a product; i.e., the act of description (as the speaker's role), the act of interpretation (as the hearer's role), and the produced description. These notions

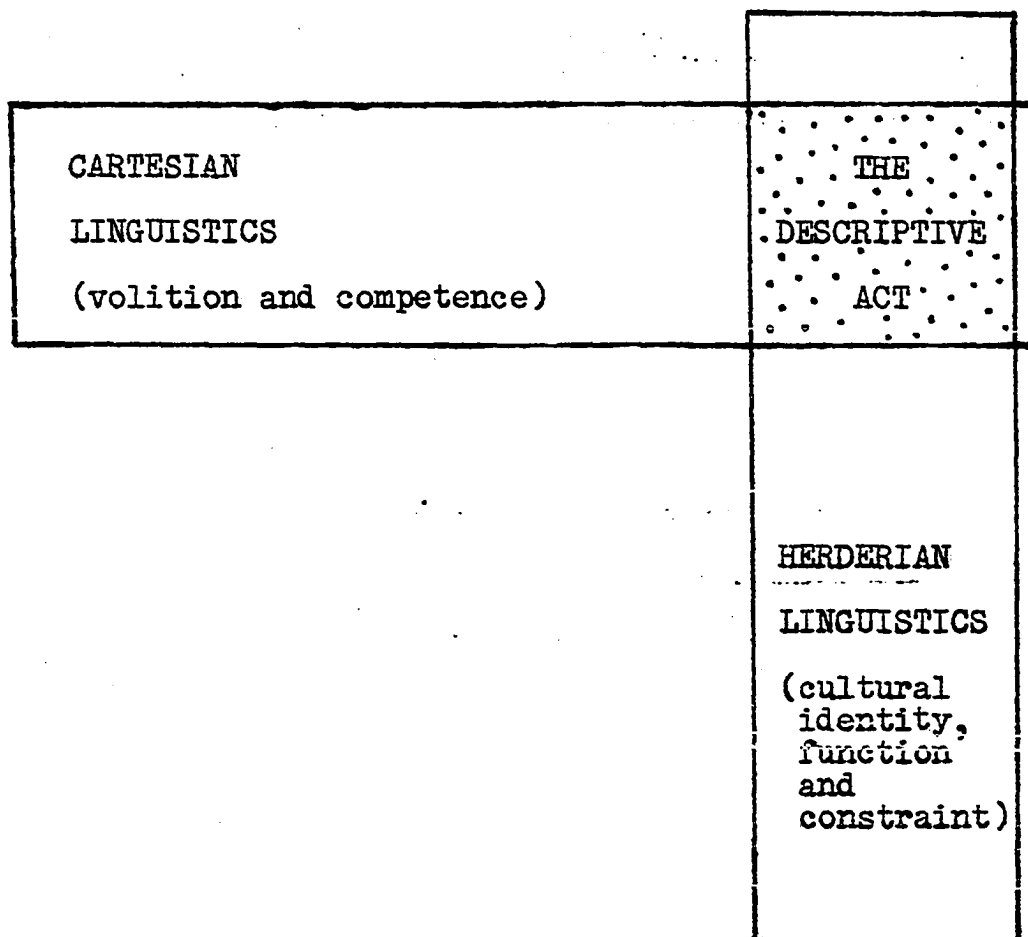


Figure 1.2. The descriptive act in theoretical context

will be formalized and given detail later in Chapter II. For the moment, however, they provide some strategic points at which we may begin to study the system of constraints within which the descriptive act occurs and the manner in which these constraints take us beyond the individual act to society.

The first of these constraint systems operates with regard to the structure of the "parties to the act"; or from the perspective of the speaker; the problem the distribution of experience. As members of a broader societal complex each of the parties to the descriptive act finds himself having a position in a broader causal-functional system (Sorokin, 1937:13-18) which includes the functionally differentiated behavior of other members of the societal population, correlated aspects of material culture, and those aspects of the physical setting within and upon which the causal-functional system operates. A key factor in the organization of the distribution of a posteriori forms of experience, then, is determined by their "functional significance" to the causal-functional system, and the availability of those who are "functionally responsible".

Related to this first constraint system, and implied in the notion of "functional responsibility", are the constraints operative upon the access to the experience itself. A fact of modern life seems to be differential access to

experiences; or at least a differential sensitivity to them. Also, fundamentally conditioned by placement within the causal-functional system of society, is the particular aspect of a given experience which is likely to catch the attention of a given member of that system. For instance, an auto mechanic, a pedestrian, an automobile owner and a highway patrolman are all likely to have interests in the automobile. Which aspect of the machine and its operation they are sensitive to, however, is strongly mediated by their position in the causal-functional complex.

The third system of constraints operates at a level of the linguistic resources available to the act. It is this system of constraints which strikingly articulates the nature of the societal Weltanschauung and the sui generis aspects of society. One aspect of this constraint system has already been briefly discussed (see pages 38-41) and may be simplified if we momentarily focus upon the linguistic resources available to the speaker, or the "constructor" of the description. Now the linguistic resources available to the speaker stand in a relation to the act of description precisely paralleling the relation between language and acts of speech in general. These resources exist prior to, and independent of, any particular act of speech produced by the speaker. Similarly, as resources for the construction of descriptions, they exist prior to

and independently of any particular act of description. What is more critical, however, is that they must exist prior to and independently of the experiences they will be used to describe. In this sense, given that we know the lexical resources available to a given member of a societal population, as well as the syntactical rules by which he concatenates these basic formatives into expressions, then we might quite easily view this linguistic resource base as representing the individual's capacity to "re-present" matters which find their original "presentations" within his personally isolated experiences.

This system of constraints itself, working as it does with a socially provided resource base, is an intriguing social fact and should itself merit the attention of sociologists. More intriguing, however, is the fact that such linguistic resources (particularly lexical) are themselves differentially distributed in society and that this differential distribution is itself highly organized about the causal-functional system.¹ Thus, in a like manner, we

¹In the context of an earlier section discussing the role of language planning in less developed countries, the process of "linguistic modernization" was discussed (see page 17). It should be apparent to the reader that this distributional effect is precisely that which the process of linguistic modernization aims to produce. It is a critical social process. Yet these three distributional effects (the differential distribution of experience to individuals, the differential distribution of lexical and other linguistic

may speak of the "differential distribution of the capacity for re-presenting matters of experience". Further, we may now begin to meaningfully discuss a re-presentational system which, formed from a kind of linguistic mosaic, is uniquely a feature of society and of no individual. It is this broader capacity that Emile Durkheim referred to as the collective representation¹ and which formed the basis for the theory of knowledge which was so distinctively Durkheimian. Such "representations convey" Durkheim (1966: XIiX) notes, "the way in which the group conceives itself in its relation to objects which affect it." Further, Durkheim notes that ". . . it is unquestionable that language, and the system of concepts which it translates, is the product of a collective elaboration. What it expresses is the manner in which society as a whole represents the facts of experience. The ideas which correspond to the

resources, and the differential distribution of descriptions into the societal population) have all been sorely ignored by a number of parties who should have been interested; including students of the sociology of knowledge and the sociology of language.

¹The greatest portion of Durkheim's work on this topic may be found in three sources: The Rules of Sociological Method (originally 1895; 1966:XIi-IViii), an article entitled "Individual and Collective Representations" (originally 1898; now included in Durkheim, 1974;1-34), and his last major work, The Elementary Forms of Religious Life (originally 1912; 1965). The last noted work is by far the most sophisticated of Durkheim's discussion of this basic notion and I will rely heavily upon this work for my own "neo-Durkheimian" presentation.

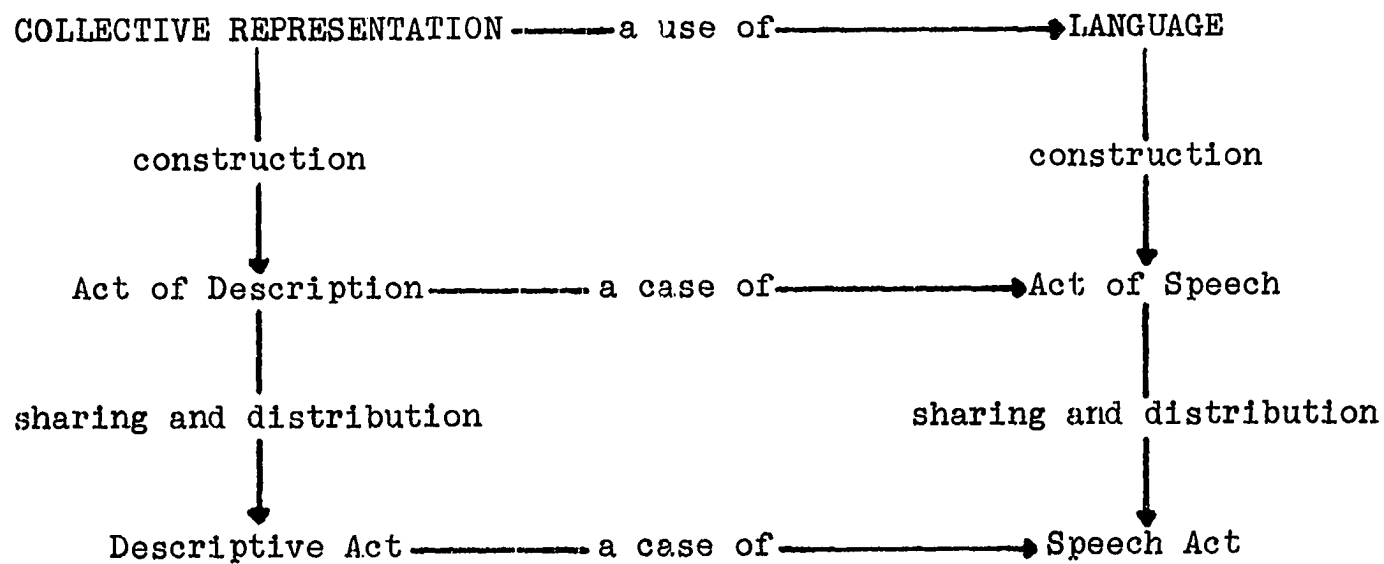


Figure 1.3. The collective re-presentation and language: Some basic relationships

diverse elements of language are thus collective representations (Durkheim, 1965:482). The notion of collective representation and its theoretical position relative to previously encountered notions is displayed in Figure 1.3.

Returning to an approach more akin to that offered by Sorokin, we may note that this differential distribution of the capacity for re-presentation (as given in the differential distribution of linguistic resources), and the individual's containment in it, marks the manner in which the individual participates in another component of the societal complex; the logico-meaningful system (Sorokin, 1937:18-21).¹ If we restrict the Durkheimian notion of

¹Corresponding to Sorokin's analysis of society into its causal functional and logico-meaningful components, was Durkheim's analysis into the real and ideal components of society (Durkheim, 1965:470). It is important to note that in neither case are these conceptual pairs thought of as oppositions or types of societies (such as was the case in the Durkheimian opposites of Mechanical and Organic). They are part and parcel of the same societal phenomena. Durkheim stated this explicitly.

A society can neither create itself nor re-create itself without at the same time creating an ideal. This creation is not a sort of work of supererogation for it, by which it would complete itself, being already formed; it is the act by which it is periodically made and remade. Therefore, when some oppose the ideal society to the real society, like two antagonists which would lead us in opposite directions, they materialize and oppose abstractions. The ideal society is not outside of the real society; it is a part of it. Far from being divided between them as between poles which mutually repel each other, we cannot hold to one without holding to the other. For

collective representation to problems of re-presenting experiences encountered in the physical setting only (that is, to the exclusion of matters "internal to the society), then the collective representation may be viewed as a functional specialization of a broader logico-meaningful system. It is predominantly through this ideal system, and the descriptive acts which realize one aspect of it,¹ that the society maps its causal-functional system onto its physical setting. Attempting to articulate the manner in which the causal functional and logico-meaningful systems interrelate, however, is at this point difficult at best. There are a few things which can, and should, be noted however.

The first of these is that it is the logico-meaningful system (as a system which the individual partakes

a society is not made up merely of the mass of individuals who compose it, the ground which they occupy, the things which they use and the movements which they perform, but above all is the idea which it forms of itself (Durkheim, 1965: 470).

¹Being that the descriptive act is a physical one (at least in part) it is best seen as a part of the causal-functional system. The potential for re-presentation from which it was drawn for actualization, however, is a part of the logico-meaningful system (a sort of deep structure base as Chomsky might note). As we shall see, the causal-functional system is a victim of reality and actual occurrence. It exists in current and historical forms of actual behavior. The logico-meaningful system is not so bound.

of but never exhausts) which allows the structuring and distribution of "meaningful orientations toward . . . the physical world, organisms, personalities, and social systems" (Parsons, 1969:10). Through meaningfully constrained and coordinated acts of description, for instance, the logico-meaningful system brings into the society (in a distributionally organized manner) a conceptually reduced version of its physical setting; one to which the community can relate through "action" and about which it can plan and organize.

Secondly, it is the logico-meaningful system which allows the transformation from behavior (as individually purposive movement) to action (as behavior to which others can attribute purpose). It breaks down behavior into units which can be subject to communications and are recognizable. (A key example here, is the phonemic base of a given language community. The members of such a community have to learn the nature of the distinctive features which separate and distinguish phonemic units; thus, allowing them to decompose the rather continuous stream of speech into units which can be bearers of meaning. One of the first tasks of any person attempting to learn another language is to gain the ability to recognize such distinctive features.) In doing so it provides the "deep structural" base for the generation of meaningful action; it allows the community

to plan, direct and organize "future" states of affairs; to project alternative courses of action, compare them, and select for enactment those judged best suited for continued societal adaptation. From the anthropological perspective the logico-meaningful system provides an "emic" base (Sturtevant, 1964:99-131) by means of which it interprets its physical setting into an environment, and engages in behavior towards that environment which has meaning to the participants; i.e., action.

Thirdly, there is a logical independence between these two systems (see Geertz, 1973:142-169), that is either one may change without substantial changes in the other. For example, in areas of functional specialization about "environmental" problems, we will usually find that segment of the societal population dealing with the given area (and at a given moment) as carriers of rather specialized linguistic resources. As was noted earlier this collective linguistic resource base defines a collective capacity for the re-presentation of experience which again may extend beyond the specialized capacity of any one actor. This functionally separable re-presentational capacity defines a functionally separable domain of discourse within which that societal subpopulation operates. This societal subpopulation may increase in size without any necessary change in the complexity of the domain itself (as might be indicated

by the size of the lexical resource base). On the other hand, the domain of discourse may proliferate with no increase in the size of the population base carrying the domain. This is an area of needed research. In conjecture, however, it seems quite likely that, given the finite lexical retention capacities of individual members of the societal population (Chomsky, 1965:3-15; Miller and Chomsky, 1963), massive increase in the domain would necessitate an increase in the size of subpopulation carrying that base. Since the size of the domain sets real limitations on the subsystems capacity for representing this seems like a likely meeting ground for students of population dynamics and students of the sociology of knowledge. At any rate, numerous intriguing questions arise at points such as this one which are beyond the scope of this dissertation.

Finally, we must note, that it is through the causal-functional system that an observer has access to the logico-meaningful system. A directly parallel here is that between a language community and a speech community. We really only have access to the a priori system of language through a posteriori contacts with acts of speech. In fact, and this is directly in line with the Herederian perspective, language in its various forms of use, the patterns in which that use occurs, and so on, is the best single index of the "deep structure", logico-meaningful system. Here it is

appropriate to recall Hertzler's (1965:35) comment that "language carries the definition of all situations; it is the dissecting agent by which the structures, functions, processes, relations and factors of the general and particular world are laid bare." Some basic relations are displayed in Figure 1.4.

In sum, then, the processes by which language structures the experiences of the members of societal communities should now be more obvious. We need not even consider the "cognitive template" perspective to know that it does. For the manner in which language structures experience is not so much through "the mind's eye" as through use and communication--acts of volition. Fundamental among such acts, as we have discovered, is the descriptive act; its components, the choices and volition they represent, and the constraint systems within which they exist. This act is a key one for an additional reason. Recalling Figure 1.1 the descriptive act brings us to a crucial point of convergence between the interests of SOL and those of the methodology of sociology.

A priori uncertainty structures in language: Introductory notes on the constrained "Cartesian" environment of the descriptive act As was noted in the previous section, the causal-functional system operates in the past and the present; it is concerned with actual occurrences--cognitively

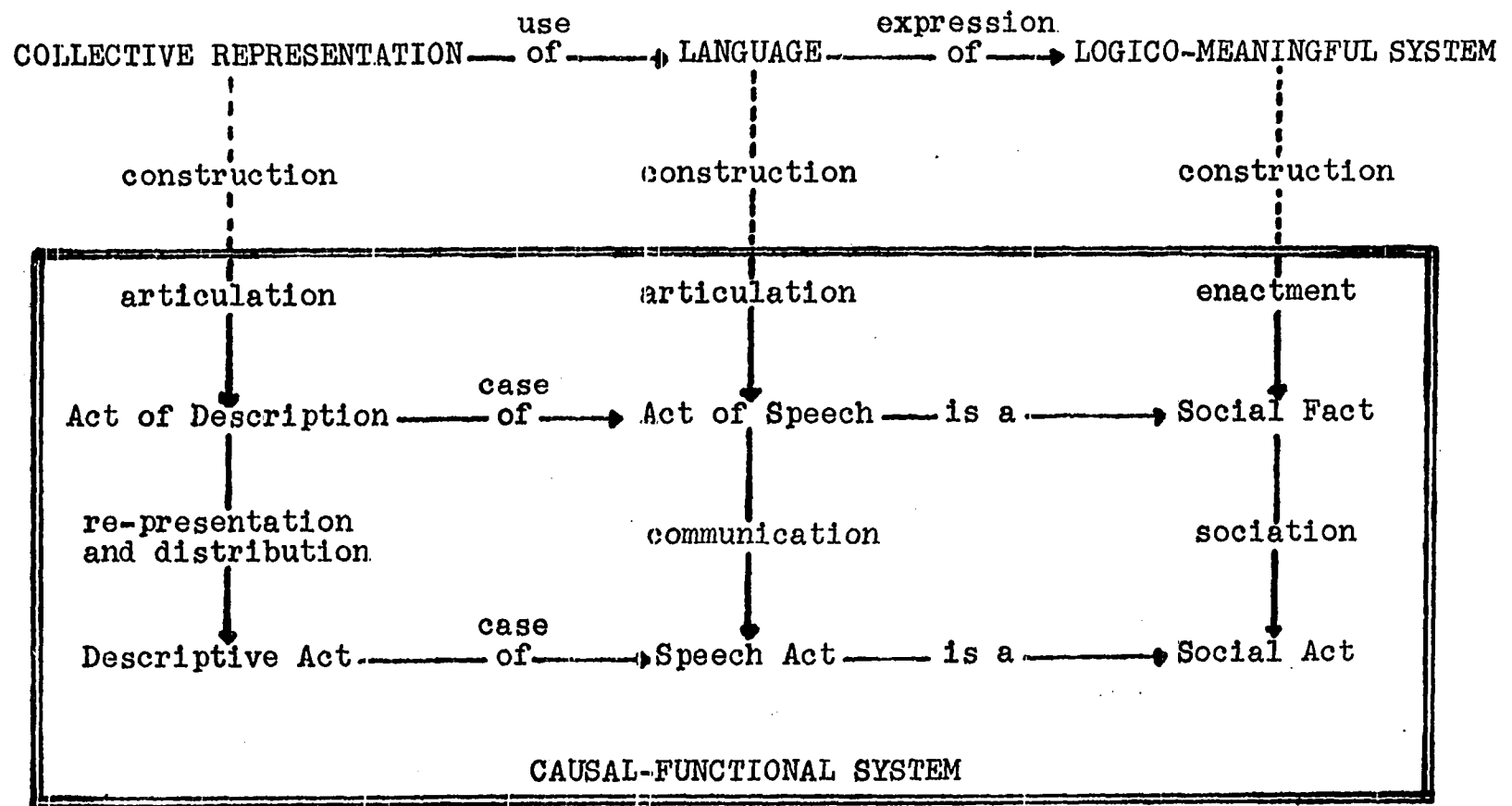


Figure 1.4. The descriptive act and its theoretical setting in the societal complex

available (differentially) as a form of a posteriori knowledge. Knowledge of this direct, cognitive form will be referred to as knowledge C-a posteriori. As was also noted in the previous section (and displayed in Figure 1.4), the logico-meaningful system participates in the ongoing processes of this empirical system of activities and operations by providing an ideal system (language) by means of which C-a posteriori knowledge forms can be distributed beyond the limitations of ostended availability. Such linguistically mediated forms of a posteriori knowledge will now be referred to as L-a posteriori.

A society, however, does not exist simply in the past or present. The human propensity for planning and the pursuit of goals has brought mankind face-to-face with the future as well. Unlike the present and the past the future is unknown and unavailable in any cognitive sense; it presents mankind with uncertainty¹ (Dewey, 1960; Bridgeman,

¹It must be made clear that by the term "uncertainty" I do not mean any sort of emotional or psychological state such as the "tension or imbalance" of Lundberg's behavioristic philosophy (1964). Rather, we are dealing with a simple relation between an unrealized future and what can be "said" or known about it. In this sense the concept of uncertainty, as used here, is more closely related to the notion as it is used in the "semantic information" theories of Hintikka (1970a: 3-17) and Bar-Hillel (1964:221-312). However, just as these theories were meant to be a generalization of the statistical information theories of Shannon and Kinchkin, the work developing here is meant to be a generalization of the "semantic information" perspective.

1959; Lewis, 1971). The human tendency to cooperate and confront the future by means of social vehicles has led mankind to formalize these uncertainties in the semantic, syntactic and (most importantly) the pragmatic structure of its language institutions; an uncertainty structure embracing all components of the causal-functional system--including language use (see page 51). The manner in which this uncertainty structure finds its expression in linguistic structure is a complex and semantically multifaceted affair. There is nothing very mysterious about it, yet its existence is not a fact immediately available to common sense or intuition. In terms of language use it seems to form a part of what Chomsky (1965:27) and Michael Polanyi (1964) have termed our "tacit knowledge" of our language. It generally remains unarticulated. Yet, upon inspection, its existence is as obdurate a fact as one could hope to find in any science.

The search for such linguistic uncertainty structures is an intriguing one. For the structure of uncertainty in a natural language is manifested neither in acts of description (as Cartesian "outcomes" participating in the causal-functional system), nor in the existentially prior (and differentially distributed) capacities for re-presentation from which they emerged and by which they were constrained. Rather, as we shall explore in detail in later chapters, this a priori linguistic uncertainty structure finds its existence in the

emergence itself; i.e., in the relation between these two epistemologically heterogeneous entities, and in their implications for the structure of the reality from which C-a posteriori forms of knowledge are drawn (their ontological implications¹). It finds its existence in the fact that a given re-presentation does not exhaust the re-presentational capacities of the speaker, nor the interpretive capacities of the hearer. But most of all it finds its existence in the relation between what is expressed and what is expressible; in the relation between the constrained, Cartesian outcome which the descriptive act represents (see Figure 1.2) and its "Cartesian" environment² which is drawn from the individual's broader capacities for re-presentation and general

¹When we discuss the ontological implications of such linguistic structures we are simply referring to the manner in which that system leads us to expect the existence of certain kinds of objects and structure in the cognitively available world (cf. Kaminsky, 1969). Since, in the act of interpretation, we find ourselves drawing out these implications, the notion of ontology is an important one.

²The notions of "cartesian environment" and "linguistic uncertainty structure" are two referentially related but not synonymous means of discussing the same general phenomena. When I discuss a "linguistic uncertainty structure" I have in mind an institutional component existing quite independently of any act which might realize it. When I discuss the "Cartesian environment", on the other hand, I am discussing a linguistic structure relative to some act of re-presentation which draws upon it and bears certain relationships to it. These notions will become clearer as we proceed.

communication. A major concern for this dissertation will be to examine complexities of this relationship, at the physical, syntactic, semantic and pragmatic levels. Although we can show that each act of re-presentation does concretely imply the existence of an a priori Cartesian environment (indeed, language would not be of much use if it did not provide such structures), it is not always the case that such environments can be given a definitive form. This point, however, brings us to the next topic.

Language and experience in the scientific community

As was mentioned at the end of a previous section, the descriptive act represents a critical point of convergence between the interests of the student of SOL and the interests of the student of the methodology of sociology (as one who thinks "heterogeneously" about nature). In both the scientific community, and the broader societal context from which it draws its human, organizational and symbolic roots, the ability to linguistically "re-present" (and thus distribute) matters which find their original presentation in individual experience, plays a functional role in the maintenance of the basis of community. Yet in the scientific community the need to consider the nature of this act must be felt with a greater intensity. For in the scientific community more than any other segment of society, experience is an intensely cooperative activity (cf., Russell, 1948:3-8; Lundberg, 1964:1-5).

Indeed, the experience of the individual scientist can achieve no scientific significance until it can become a distributable, public experience; a sharable, transpersonal "fact" or "datum" (see Dewey, 1960:99; 1958:166-207; Campbell, 1952: 27-30). Science, it seems, is not so much impersonal as it is interpersonal. Ultimately, as we shall see, the space of all scientific (as opposed to personal) experience has its points and coordinates provided by the social institution of language; for it is through the descriptive act and thus, by means of language that any personally isolated experience will achieve what Emile Durkheim might have termed its "collective re-presentation" (a "social metric" as it were).

Physicist, biologist, ethnologist, historian, and even the linguist; the members of the scientific community and its various enclaves, are in the most fundamental manner, dependent upon the social institution of language¹--a

¹Numerous works on "scientific language" do exist, particularly as generated by the fundamental epistemological movement of empiricism (including reactions to empiricism) and its derivative movements, logical empiricism, pragmatism, and operationalism. All these movements have essentially been pragmatic movements (in the linguistic sense of that term). For an extensive bibliography see A. J. Ayer (1966:381-446). For a partial list of works that have been influential in my own research consider the following: John Locke (1959a,b: Vols. I, II (II in particular)), G. W. Leibniz (1951), Ludwig Wittgenstein (1974; 1968), Richard von Mises (1951), Hans Reichenbach (1938; 1966), Michael Polanyi (1964), Bertrand Russell (1948), C. I. Lewis (1971), Rudolf Carnap (1967),

dependence the scientific community has been aware of in only limited detail, a dependence even more acutely neglected in contemporary sociology. This is somewhat understandable, however, in light of the fact that the majority of the

W. V. Quine (1963), John Dewey (1916, 1958), William James (1970), Ernst Cassirer (1953a), Percy W. Bridgeman (1959), L. E. J. Brouwer (1913) and Benjamin Lee Whorf (1970).

The concern for the language of science, however, as manifested in these movements, is not (in my opinion) indicative of a corresponding awareness among "working scientists". By-and-in-large these works do not filter down into the "popular philosophy" encountered in academic training--nor in many cases, does it seem necessary. Neophyte scientists are generally sufficiently preoccupied with being enculturated into their own specific disciplines to become involved in a detailed analysis of their relation to their language. I feel the case is different for sociology. Others feel the need is more general. Whorf (1970:246) in particular has said:

It needs but half an eye to see in these latter days that science, the Grand Revelator of modern Western culture, has reached, without having intended to, a frontier. Either it must bury its dead, close its ranks, and go forward into a landscape of increasing strangeness, replete with things shocking to a culture-trammeled understanding, or it must become, in Claude Houghton's expressive phrase, the plagiarist of its own past. The frontier was foreseen in principle very long ago, and given a name that has descended to our day clouded with myth. That name is Babel. For science's long and heroic effort to be strictly factual has at last brought it into entanglement with the unsuspected facts of the linguist order. These facts the older classical science has never admitted, confronted, or understood as facts. Instead they had entered its house by the back door and had been taken for the substance of Reason itself (Whorf, 1970:246).

members of the scientific community are engaged in

"Homogeneous" thought about nature.¹

Now the study of the linguistic and distributional

¹Some works that have dealt with the role of language in sociology (although in quite limited detail) are: C. Wright Mills (1953), Charles Horton Cooley (1922:59-79), Abraham Kaplan (1964), and Alvin W. Gouldner (1970). Other works of a more intensive nature are: George A. Lundberg (1964), H. Alpert (1938:855-861), Eugene J. Meehan (1968), John Madge (1965), Peter Abell (1971), and Aaron Cicourel (1964). It has been characteristic, however, that works which deal with the critical use of language in scientific research and theory have not been widely received. G. A. Lundberg was apparently cognizant of this fact when he wrote:

Nothing is so likely to give offense as an inquiry into the meaning of the eloquent phrase in which social scientists today for the most part attempt to communicate. The linguistic noises to which we have become emotionally conditioned seem a peculiarly personal and private possession upon which we rely to a great extent for the projection of our personalities. To submit a person's language to ruthless analysis is quite generally regarded as a personal attack through the medium of sympathetic magic or otherwise. "Hair splitting", "garbling", "distortion" are favorite epithets for those who meddle with other people's language. Still more general is the feeling that "fine" points in linguistic tools do not matter, and are merely a way by which "smart alecks" call attention to themselves. This may be the case, of course. Nevertheless, we shall here take the view that a careful scrutiny of the fitness of our linguistic tools is perhaps of greater importance than a loquacious use of them (Lundberg, 1964:51).

Works having a superficial interest in the role of language (and in a more "popular philosophy" vein) are: Jack P. Gibbs (1972), Hans L. Zetterberg (1965), Nicholas C. Mullins (1971), Jerald Hage (1972), and Hubert M. Blalock (1964; 1969). These texts represent the upsurge in the popular interest in "theory construction" that is evident in contemporary sociology. Many of these works have stemmed from a legitimate concern with the lack of rigor of sociological theory and,

systems of the scientific community presents the student of SOL with a variety of opportunities which may allow him to better understand human communication systems in general. Several factors contribute to this. The first reason is that the history of the scientific community, the manner in which it uses its linguistic resources, and the concerns the community has had about language (a concern which is itself differentially distributed in the scientific community) down through the ages, are all well preserved and documented. There is no lack of "data" for study; indeed, the amount of material is overwhelming.

to the extent that people have become more conscious of the process of theory formulation, these books have probably been beneficial. For many reasons, however, these texts seem to obscure more problems than they clarify. Hopefully the sources of disagreement which differentiate their approach to sociological knowledge from mine will become more apparent during the course of this dissertation. In principle, however, I feel that these attempts at "cookbook" theory construction have been more "honorific" than actually useful. When they should have made students of science more reflexively aware of the intrinsically human, social, and volitional process of theory construction, they were rather reifying the belief in the existence of the Scientific Method; the belief that there are rituals, which when enacted somehow ensure the validity of the results; "an invocation to the presiding deities of scientific method, serving to ensure an appropriately 'scientific' status for what follows, and avowing the proper concern with meeting standards of scientific acceptability" (Kaplan, 1964:19-20).

Secondly, the scientific community has evolved exceptually well institutionalized systems for the re-presentation and distribution of a posteriori forms of knowledge. These would include journals, professional meetings, seminars, etc. Relatedly many disciplines have fairly well standardized their linguistic resources bases and, through specialization, have distributed these resources in markedly visible ways. We may also note that the "mechanisms" of the distribution of linguistic resources are also relatively well defined.

Thirdly, there are very few systems in which the mechanisms for sharing (and thus distributing) a posteriori knowledge are as simple as they are in the scientific community. Karl Popper (1968:18) made the following comment of direct relevance here.

The problem of epistemology may be approached from two sides: (1) as the problem of ordinary of common-sense knowledge, or (2) as the problem of scientific knowledge. Those philosophers who favor the first approach think rightly, that scientific knowledge can be only an extension of common-sense knowledge, and they also think wrongly, that common-sense knowledge is the easier of the two to analyze (Popper, 1968:18).

Later, referring to Kant, Whewell, Mill, Peirce, Duhem, Poincare, Meyerson, Russell and Whitehead, Popper (1968) noted that

Most of those who belong to this group would agree that scientific knowledge is the result of the growth of common-sense knowledge. But all of

them discovered that scientific knowledge can be more easily studied than common-sense knowledge. For it is common-sense knowledge writ large, as it were. Its very problems are enlargements of common-sense knowledge (Popper, 1968:22).

Popper's comments are equally valid when placed within the sociological context as has been developed here.

Quite in line with Popper's observations, there are few places where the pragmatic principles of language use are quite so clear. The specialized languages of the scientific community, embedded as they are in a meta-linguistic "explicative" structure (Carnap, 1967), are a reflection of the community's endeavors to adapt the natural language resources which were at hand, to the rigors of cooperative experience (i.e., to the fact that the foundations of scientific knowledge are provided by L-a posteriori, rather than C-a posteriori forms). They reflect what the concerns of the community have been in its attempts to "write large" the problems of common sense--linguistically mediated--knowledge. Relative to the interests of the student of the methodology of sociology, I assert that, if properly viewed, the real drives of the scientific community, given its dependence on L-a posteriori forms, has historically been, not towards quantification, but towards the reduction of the amount of indeterminacy in linguistically mediated uncertainty structures (Mises, 1951). These endeavors (particularly as viewed in the works of the seventeenth century

philosophers such as Locke, Leibniz, Newton and other--who laid the yet unshaken foundations of modern science) have had a bifurcated intent. The first intent has been the production of uncertainty structures with known properties and definitive symbolic forms. Such formalized or "explicated" structures we shall refer to as "re-presentational systems". Such re-presentational systems provide a definitive Cartesian environment for attempts at their use. The second intent, and this is often misunderstood, has been to control (not erradicate) the ontological consequences of the natural languages upon which such endeavors ultimately relied. Quantification was only a by-product of these endeavors. We shall return to this point in the next section. By understanding the foundations of such re-presentational systems the student of SOL may acquire more information about the nature and operation of the uncertainty structures of the natural languages from which they were derived.

Of related interest here is the fact that a phenomena occurs in the scientific community which rarely occurs in the broader society and more; impoverished languages. By an impoverished language I mean one in which there are few terms and few alternative ways of expressing a given thought. This is highly related to Bernstein's notion of a "restricted code" (Bernstein, 1973). In the context of the scientific community this occurs by convention, in the form of primitive

(or undefined) terms, atomic propositions, etc. This strategy has met with little success in the social sciences, however, and this differential survival of impoverished forms may allow student of SOL to determine the conditions under which such forms can successfully exist.

Now, given all the benefits that could accrue from the study of language and its use in the scientific community, that fact that it has not occurred, except in philosophy, raises some very interesting questions concerning the reasons for this lacuna. I believe two key reasons exist. The first is that the members of the scientific community are extremely ethnocentric and "seem" to be resistant to outsiders studying their language habits (cf. Lundberg, 1964: 51). Whether or not this resistance is one which would actually manifest itself in research situations, it is generally impressed upon students of society that there are no greater authorities than the scientific community and its traditions. As derived from their experience in the broader social context, such students are aware that "one" does not inquire too deeply about authorities. A second factor, here, is that a number of otherwise qualified students of the sociology of language, find themselves in ethical and ontological conflict with the "Scientific Method" that they feel to be operative in the scientific community, and which they feel to be encroaching on their own subject matter.

Consequently, an area of potential value to theoretical endeavors in the sociology of language goes undeveloped; in particular, the ethnography of mathematics in use. Such studies could both make a contribution to SOL, and be of great value to the student of the methodology of sociology.

Methodology and Re-presentation: The Problem and Its Paradigmatic Properties

A brief review

Throughout this chapter I have pursued a very brief and purposively limited study of the sociology of language. This was accomplished through three nested stages; each stage dependent upon those prior to it and each more focused with regard to the basic issue of this dissertation. My intention in pursuing this particular course, as was specified in the initial sections (see pages 1-10), was of a three-fold nature. First, by developing a basic conceptual platform, I sought to inquire into the nature of the institution of language and its role in the context of society. Secondly, it was hoped that, by doing so, students of the methodology of sociology might acquire a more realistic feeling for the role of language in the scientific community and begin to realize that basic functional isomorphism which exists between language use patterns in both these social contexts. Thirdly, by accomplishing these first

two objectives, it was my ultimate goal to produce a SOL vantage point from which a core problem in the methodology of sociology might be viewed; the problem of description. The reader should now sense the direction in which this problem will be pursued throughout the remainder of this thesis. We can begin this "pursuit" by noting the following.

Sociology and the L-a posteriori: Making the adjustment

Like the rest of the scientific community (and its larger societal context) the sociological community is most constructively viewed as an ongoing system designed for the acquisition, construction, and distribution of L-a posteriori forms of knowledge. At its most primitive base the sociological community is a complex system for re-presentation. Of course it does have "higher" functions, such as the production of theoretical forms of knowledge, but if it cannot successfully accomplish its more primitive function it will not succeed in anything more elaborate. As I shall propose later, these higher functions operate within the context provided by the lower order, L-a posteriori system. It is characteristic of contemporary approaches to sociological theory construction that, with respect to these functions, they have an inverted sense of the nature of scientific activity. In the course of this inversion they have convoluted the very philosophy of science which they rely upon

for justification, and continue to create a false sense of disparity between theory and research.

Like the rest of the scientific community, the sociological community must ultimately rely upon the natural language resources it has at its collective command. It too will be faced with the necessity of adjusting this resource base (and the capacity for re-presentation it represents) to the rigors of cooperative experience; i.e., to the fact that the least form of scientific experience is, by nature, L-a posteriori. If it is to successfully accomplish this it must have a more accurate conception of the manner in which other disciplines have succeeded in their efforts.¹

¹The necessity of adjusting to the fact that the least form of scientific experience is L-a posteriori has had, and will continue to have, serious repercussions throughout the scientific community. It is precisely such adjustments which form the basis of Thomas Kuhn's "scientific revolutions" (Kuhn, 1974) which Kuhn discusses in terms of changes in world views of Weltanschauung. In certain quarters, such as in the physical sciences, there has been a great deal of success in coming to terms with this fact; although the "theory of relativity" and "quantum theory" do reflect major discontinuities (Whitehead, 1969b, 1971; Cassirer, 1953a; Dewey, 1960). Other scientific endeavors, however, particularly in the behavioral sciences, have experienced much less success and it is quite likely that their problems will persist; indeed it has only been on rare occasions that the fact itself has been directly confronted in these quarters. As philosopher-linguist Whorf (1970:246) pointed out, they are the victims of an "entanglement with the unsuspected facts of the linguistic order", or more appropriately, of the sociolinguistic order.

Factors complicating the adjustment

Linguistic vulnerability Unlike the rest of the scientific community, however, the sociological community has a number of characteristics which will continue to amplify its difficulties in adjusting to this fact. In the first place, by the very nature of its subject matter, the sociological enterprise finds itself thoroughly embedded into the larger societal context. Relatedly sociology is faced with a much heavier reliance upon its natural language foundations. With very few exceptions (Webb et al., 1966), nearly all the observational techniques rely, in one way or another, upon the ability to establish a dialogue between the researcher and the researched. Questionnaires, interviews, informants and the like; all of these carry a heavy burden in providing the "grist" of sociological analysis. Indeed, the researcher often finds himself forced to work with the re-presentational capabilities (as given in the linguistic resource base) of his subjects, and, given this linguistic vulnerability, leaves himself open to the indeterminacies of the Cartesian environments elicited in subject generated re-presentations. Even the most structured interview and questionnaire formats do not evade this issue. The way to overcome these dependency related difficulties is not to abandon such dialogues, for the natural languages within which they occur give us access

(see page 60) to the ideal, logico-meaningful context within which all relevant societal activity occurs. Rather we must seek to learn more of the nature of language, the manner in which it provides Cartesian environments for acts of representation, the ontological implications of such environments, and, most importantly, the manner in which such ontological structures operate in the pragmatic context.

When we come to the flow of L-a posteriori forms of knowledge internal to the sociological community (as among professional peers), as a re-presentational complex, we find that this first set of facts confounds the problems of our adjustment. For it is often the case that we are re-presenting "re-presentations"; thus getting a kind of ontological overlay in our re-presentational systems. Geertz has referred to this as the issue of "thick description" (Geertz, 1973:3-30). Before we can adjust to the internal problems of the rigors of cooperative experience, we first have to consider the implications of re-presentations as experiences. These facts, also confounded with the fact that a large number of working sociologists harbor erroneous conceptions concerning the nature of re-presentational systems in the larger scientific community, all operate against the effectiveness of the sociological community as a re-presentational complex. Efficiency is not even an issue at this point. As was noted before, the

only way for sociologists to overcome these difficulties is to get some of the methodological "stardust" out of their eyes and become familiar with the basic principles of re-presentation.

Relatedly, as sociologists have begun to lay more serious claim on their scientific status, a new dialogue has begun; that between sociologists and policy makers. Of particular interest to me is the intensification of dialogue between social scientists and those concerned with national development planning.¹ Correlated with this need for planning has been the need for social information systems. Here sociologists have been quick to claim that they can provide effective re-presentational contexts for concrete decision making activities. I am afraid, however, that sociologists will have much to learn about the construction of such decision making environments and in doing so they are going to have to have some knowledge of the linkages between the causal-functional systems of society and its overarching logico-meaningful system. The manner in which a social system, be it a society, bureaucracy, etc.,

¹Since June of 1974 I have had the privilege of being associated with the "Indicators for Social Development Project", a project headed by Dr. Leslie Wilcox. This context has done much to influence and concretize my perspectives on the structure and role of re-presentational systems in both scientific and applied settings.

re-presents its environment (the complexity of re-presentational systems, etc.) is not unrelated to the operational capabilities of that system. Thus the problem is not simply that of creating a re-presentational system (a social information system) but also of mapping this system into the operation capacities of the social entity involved. A re-presentational system which is arbitrarily constructed relative to the causal-functional patterns of a social system works against, rather than for the survival or success chances of the given social system. The basic principle is that complexity in the logico-meaningful system must be in a favorable balance with complexity in the causal-functional system and that changes in one must be accompanied by changes in the other. "Artificial" complexity must not be uncritically introduced. This is related to the next point of discussion.

Ontological divergence Beyond the problem of linguistic vulnerability (though inextricably linked to it) there exists another problem which will complicate the process by which the sociological community adjusts to its dependencies on I-a posteriori forms of knowledge. This is the problem created by the rather strong divergence of ontological stances which survive in our enterprise (Gouldner, 1970; Rioux, 1970:33-47; Warshay, 1971:23-45). Kuhn (1974) would refer to this as a divergence of paradigms. I will

refrain from this usage, however, for the simple reason that I do not feel the divergence is truly paradigmatic.

The primary question in instances of ontological divergence concerns the "real" nature of the social realities in which sociologists practice their crafts. What objects and structures populate that social reality? What are the "social facts?" As Martindale (1960) has well documented, the history of sociology has been marked by the rise and fall of a number of schools which have competed to provide answers to these questions. Functionalism, conflict theory, social behaviorism, symbolic interactionism, ethnomethodology; all of these schools currently seek to provide a secure ontological foundation for sociology. Further, they all face the same problem with respect to the acquisition and redistribution of knowledge pertinent to their perspectives. The researcher who adopts a particular ontological strategy with respect to available C-a posterior forms of knowledge must be able, in the course of making the transformation into L-a posteriori forms, to reflect his ontological strategy in his re-presentational framework. This strategy must be concretely communicated as well.

This brings us to consider the most apparent (or publicized) instance of ontological divergence operative in the sociological community today; one which has come to override other points of ontological conflict. This is the

qualitative/quantitative opposition. There are many sides to this opposition, such as the nature of causality in sociological phenomena, and I will not concern myself with all of them. Rather I am interested in it in so far as it has implications for the re-presentation of matters of experience and also in so far as it has dysfunctional consequences for integrity of methodology in the sociological community.

I believe that ontological divergence should exist in the sociological community, for, if nothing else, it forms a sort of intellectual variety which can serve as the necessary selective base for the further evolution of our enterprise (cf., Kuhn, 1974:92-173; Popper, 1968:42). A divergence of ontologies, such as that reflected in the qualitative/quantitative opposition, however, must have a healthier, more informed foundation than that which currently exists. I find that the generative foundations of this divergence, and the recriminations which pass over its boundaries, both reprehensible and ill founded. The distinction itself is not even clear. What can we consider quantitative? Must our ontology be built on the postulate of continuity? Must all sociological spaces be metric? What is a metric space? Are qualitative approaches sub-metric? What is the relation between metricity and continuity? How many sociologists who claim to represent a

quantitative ontological stance can even begin to approach such basic questions as these? Science does not adhere in ontology. It adheres in rigorous and systematic investigations into the "real" world. It adheres in the rigorous and systematic attempts to re-present the experiences thus gained, and it adheres in the attempt to make the representational frameworks used in such endeavors, semantically effective communicative devices. It is no more, and no less, than common sense re-presented "large" (Popper, 1968:22).

The quantificationist's implication that all qualitative methods are nonrigorous and somehow constitute "soft" science is sheer nonsense. The works of sociologists such as Schutz (1973), Sacks (1972:31-74), Schegloff (1972:75-119) and others, is as methodologically sophisticated as any work done in the quantificationist community. The works of ethnoscientists such as Frake (1962:72-85) and Sturtevant (1964:99-131) is also of the finest scientific quality. Indeed, many of the ethnoscience approaches to the mapping of alien cognitive structures run directly parallel to Carnap's rigorous methods of semantic investigation; the method of intensional analysis.

The qualitative sociologist's belief, on the other hand, that all quantitative research is meaningless, or that quantification and statistical analysis have no place in

sociology, is equally fallacious. As in all matters in which technology is applied, it is not the technique which can be held blame. It is the competence of the user which must be questioned. As was said earlier, a tool is only as good as the one who uses it. Quantitative techniques, used properly, will continue to play an important and creative role in sociology. Like any approach to science, however, it must be born of something more substantial than truisms concerning the nature of science. Both sides of this opposition have been overly free with making generalizations about the nature of scientific activity.

Equally fallacious is the belief, which sometimes surfaces in the qualitative community, which attributes distortionary a priorism to quantitative re-presentational systems while viewing natural language re-presentations, as somehow ontology free. This is naive empiricism pure and simple. Scientific experience is by nature L-a posteriori. Once a C-a posteriori form is given its linguistic re-presentation it becomes part of a broader ontological structure which gives it meaning. This is its Cartesian environment. This is as true in natural languages (such as Donald Ball's ethnography of an abortion clinic, 1970:174-185) as it is in the explicated re-presentational systems of the broader scientific community. One does not escape a priori structure by choice of re-presentational

frameworks; rather one attempts to control it. As A. N. Whitehead (1969a:18) has noted, "If we desire a record of uninterpreted experience, we must ask a stone to record its autobiography." Further to this point, Popper (1968: 59,n1) has expressed the following perspective.

My point of view is, briefly, that our ordinary language is full of theories; that observation is always in the light of theories; that it is only the inductivist predjudice which leads people to think that there could be a phenomenal language, free of theories, and distinguishable from a theoretical language; . . . (Popper, 1968:59,n1).

These thoughts raise an interesting point; our linguistic vulnerability is tantamount to having to deal with ontologies which may diverge from those we hold as social scientists. Knowledge of this fact, however, can be helpful.

In this section a number of points have been raised. First, I took the view that the sociological community is best viewed as a re-presentational complex; a system designed for the acquisition, construction and redistribution of L-a posteriori forms of knowledge. This was a position afforded us in terms of the SOL vantage point constructed throughout this chapter. It is this basic function which unites the sociological community with the rest of the scientific enterprise. Secondly, I noted that, like the rest of the scientific community, the sociological

enterprise will find it necessary to adjust its linguistic resources to the rigors of cooperative experience. This adjustment is made more complex by our linguistic vulnerability. In terms of the entire sociological community it is also made more complex by the fact that there exists a great deal of ontological differentiation. Such differentiation means that differential modes of adjustment will likely have to occur as well. Thirdly, throughout this section I emphasized that this adjustment could only be accomplished in terms of an enhanced awareness of the nature of the language institution, the manner in which it ontologically structures the experiences of those dependent upon it as a source of knowledge (i.e., who take L-a posteriori forms of knowledge as their basic experience--review pages 47-48 and 65, footnote 1 on page 65 in particular), and the basic principles of representation. In my consideration of the relation between Cartesian and Herderian linguistics I attempted to show that such structuring of experience is operative in language use and not in language per se. I also pointed out that a particularly strategic place to begin the study of the manner in which this structuring occurs was in the representational context; i.e., in the context of the descriptive act. This is also where we must seek the principles of re-presentation which I hold as essential to the

methodology of sociology. This brings us to the problem of description.

The problem of description: From the vantage point

I have repeatedly stressed, in these final sections, that the least form of scientific experience is L-a posteriori in nature. As Ludwig Wittgenstein (1921 originally; 1974: 115) so aptly noted, the "limits of our world" are given in language. It is a limit which is extremely effective in the scientific community and one which bounds us on two sides. On the one hand there are those experiences we have which remain in the domain of the ineffable (Polanyi, 1964: 87-95). We have no means of expressing the contents of those experiences to those beyond the limitations of ostensive availability. Though we constantly strive to push these limits back, to bring these experiences to the level of what can be articulated, the boundary remains and as long as it does the experiences which fall into this domain remain beyond the bounds of science; beyond our capacity for re-presentation. On the other hand, we find ourselves constantly dependent upon linguistically vicarious experiences. These are the substance of our enterprise and the "data" (Dewey, 1960:99) with which we concern ourselves. We depend upon knowledge which originates beyond what is cognitively available to us. This is the "stuff" of our

induction, and the building block of our theory. To be on one side of the boundary is quite as bad as the other.

The balance between C-a posteriori and L-a posteriori forms of knowledge is thus a delicate one and although it is not reducible to its C-a posteriori substrate, the scientific community is fundamentally conditioned by it. Quine (1963) made this point quite admirably and, given our SOL vantage point, in terms we should now be able to appreciate.

The totality of our so called knowledge or beliefs, from the most casual matters of geography and history to the profoundest laws of atomic physics or even pure mathematics and logic, is a manmade fabric which impinges on experience only along the edges. Or, to change the figure, total science is like a field of force whose boundary conditions are experience (*italics mine*) (Quine, 1963:42).

The individual scientist is the cutting edge of scientific experience (cf., Durkheim, with regard to the more general context of societal experience, 1965:482-483). It is the individual scientist who has access to C-a posteriori forms of knowledge. It is his task to abstract what is relevant from these experiences and, using the linguistic resources at his disposal, construct linguistic representations which can become an effective part of the re-presentational complex. The problem of description involves the indeterminacies of this construction, the choices involved, and the constraints within which it occurs. In terms of our earlier comments

it is a two sided problem. For the individual scientist engaged in the construction it is the problem of making the transformation from the C-a posteriori form to which he has access to the L-a posteriori form which can be given wider access; it is the problem of explicating the ontological stance he takes to the experience; it is the general problem of being able to effectively re-present that which was presented to him. To the broader sociological community it is a concern for his re-presentational competencies; it is a concern for being able to clearly understand the ontological structure within which it was embedded.

The problem of description is also an integrative place to begin in our search for the generic methodology deemed desirable in the earlier stages of this dissertation (see pages 3-11). It is integrative for two reasons. First, at the operational level, the problem of description is one which confronts every approach to sociological knowledge. As existing methodological perspectives have made abundantly clear, any theoretical endeavor which seeks to compete as a source of knowledge about the social world must at some point confront that world. Whether one approaches social reality from the verstehen school of Max Weber (1964) or Alfred Schutz (1973), the phenomenological school in the tradition of Edmund Husserl (1970) and Martin Heidegger (1962), or the physicalist school as classically

described by Otto Neurath (1959:282-317) of the famed Vienna Circle; at the point where perspective meets experience the problem of description must be fundamentally the same. Therefore, the problem of description becomes an important one. To separate, and try to understand the problem of representing matters of experience out of the social context, however, is to divorce the problem from its most meaningful setting; i.e., from the re-presentational context. The study of the descriptive act, thus, presents the problem of description in its most concrete form.

Secondly, at a more abstract level, by studying the problem of description in the social context we will find that there are certain invariant, or universal principles of re-presentation which adhere in all attempts at description; regardless of ontological stance. As a result we will find that there is a central, or kernel ontology which operates regardless of any particular ontological posture. It is inherent in the act of re-presentation itself. Thus, we find a point of basic continuity and isomorphy in the fact of what appears to irreconcilable divergence. Whether we represent our facts in our natural language, or as an n-tuple in some abstract mathematical space, there is a kernel ontology which serves as a point of unification. Most importantly, it is here that we will find the basic principles of re-presentation which can

serve as guides to our endeavors in event documentation in the social sciences. In these principles we will discover a basic logic--the logic of indirect experience--which cannot be corrupted without corrupting the very basis of our sociological community. Hopefully, by coming to understand this logic we will also come to understand that, as Wittgenstein (1974:41) implied, by the simple act of offering a description of some aspect of the empirical world, we "construct" that world for others, "with the help of a logical scaffolding." We count on the fact that this linguistically induced scaffolding draws a correct picture of the world we seek to re-present; i.e., that our kernel ontology is not an empty one.

The ontological structure made apparent in a descriptive act is completely contained in three analytical layers. The first layer we shall denote the primary ontological layer. It is in the primary ontological layer that the kernel ontology finds its expression. It forms the paradigmatic ontological core about which other ontological forms evolve. This primary layer ontology is external to the description in the sense that:

1. It operates indifferently with respect to the particular descriptive system employed (i.e., regardless of whether we employ a natural language or some highly specialized "explicated system,

- such as a complicated measurement system), and
2. It is indifferent to the particular aspect of reality which is being described, and thus re-presented.

Put in simplest terms, the primary ontological level adheres in the re-presentation and not the representation. Three concepts of interest at this primary level are the notions of "displacement", "vacucousness", and "ideal complementation". These are core concepts to be used in our initial exploration of the manner in which the Cartesian environment operates at this level.

"Atop" this primary ontological layer are the secondary and ternary ontological levels which are concerned with more internal aspects of the problem of description. More specifically, the secondary layer is concerned with "disjunctive descriptive forms", relations of "compossibility" among descriptive predicates, and "descriptive dimensionality". This level is also somewhat independent of particular ontological postures and it is at this level that much of the explicit adjustment of the dependency on L-a posteriori forms must occur. It is considerations at this level which lead to explicit (or explicated) representational systems. Above the secondary level is the ternary ontological layer. It is at this ternary level that ontological postures become fully articulated and

divergences become apparent. This ontological level is concerned with the specificities of differentiation within representational systems. Concerned basically with comparability structures, it is this third level in which contemporary treatments of measurement systems operate (Krantz et al., 1971; Torgerson, 1967); unaware of the fundamental ontological layers upon which the ternary or "surface" logic is dependent. At the intersection of these central notions (the primary, secondary and ternary layers of ontological structuring) lies the foundations of a coherent theory of description; a foundation which must proceed other aspects of empirical analysis.

Objectives: Focus and Plan

What is pursued in the remaining pages is a preliminary study of the mundane act of description; the least of scientific activities. Yet what is simultaneously being offered is the logical innerworkings of the nontrivial, integrative methodology which is required: a naturalistic empiricism fundamentally consistent with the programs of John Dewey (1958), G. A. Lundberg (1964), and most recently, Michael Polanyi (1964; 1970).

This study may be considered "preliminary" in the following senses. In the first place the focus of the study will be on the exposition of the operative principles of

the primary ontological layer and the kernel ontology it expresses. The secondary layer will be briefly discussed merely for purposes of later application, while the ternary layer will receive no direct treatment. I feel this is justified because of the paradigmatic position of primary ontological level (i.e., because it is a point of continuity and kinship among otherwise divergent research strategies) and because it is the most neglected level in modern methodology. In the second place it is preliminary to the extent that this dissertation represents one strategy for explicating the basic nature of the problems and processes involved. At this point I cannot be sure that it is the best strategy for pursuing the higher ontological levels. But then the reader must be cognizant of the fact that a great deal of this dissertation has been devoted to merely constructing a vantage point from which the problem of description can even be seen, and in terms of which the reader could feel some conceptual comfort in dealing with the problem. Although my route to this vantage point was an arduous one, I cannot believe, at this point, that any short cuts were permissible. Thirdly, it is preliminary because my approach to the problem is very open textured. Many of the highly technical arguments have been omitted in order that the "spirit" of the problem not be lost in technicalities. I have used some symbolic devices to

explicate my problem, but not nearly as much as would be necessary for a more complete exposition. Finally, this study is preliminary for the simple reason that I do not have the immediate competences to do a thorough study. As I noted at the onset, however, it is mainly meant to serve as a basic record of my thoughts at one point of my continuing intellectual development. I make no pretensions about its adequacy. The problem I have chosen is complex and multifaceted. There are undoubtedly many sides of it I cannot see. With these thoughts in mind I can state my basic plan for the remainder of this study.

The general strategy for this study will be reflexive and critical in nature and, to the greatest extent possible, explicitly formal. In this manner, if the case is overstated, then at least it is stated. If there is an occasion for disagreement, then I hope I offer something definite to disagree about; for this is ultimately my concern. If I purport something to be the case, then the reader has the obligation to consider what would be the case if what is purported herein, is not.

Chapter II is concerned with a more detailed analysis of the components of the problem than has been accomplished thus far. Here the descriptive act will be more thoroughly considered and some strategic symbolic innovations introduced. Chapter II also is concerned with the explication

of the primary ontological layer, the notion of the Cartesian environment, and the development of some basic principles of re-presentation. A number of core auxiliary concepts will also be introduced; including a very brief introduction to some basic concepts in the secondary ontological level. Included in Chapter II as well is a brief discussion of semantic stratification in natural languages, or metalinguistics. The results of the entire dissertation will then be carried over into the concluding chapter, Chapter III, and their application to some core concepts in theoretical research noted. These concepts include theory construction, data reduction, induction and inference.

Finally, it should be noted that throughout Chapter II, we will use the modeling technique first explicitly described by Weber (1964:42-43, 90-112) and later more fully developed in the works of Alfred Schutz (1973:40-66); the ideal type. This will be used for the purpose of motivating the understanding of the basic concepts. Explicitly, this technique involves the construction of the descriptive act in its simplest form. I will formulate the setting for the act, introduce the parties to the act (the homunculi as Schutz would refer to them), define the means and ends, and endow the actors involved with certain competencies, rights, and rational properties. This method allows us to "objectify"

the problem the description. It "greases" the wheels of reflexive thought and provides a standard against which concrete instances can be compared and through which concrete problems dealt with.

Concluding Remarks

No process is more basic to science than the activity of description; the process by which our "data"--the "mirrors of science" as R. Houwink (1970) has picturesquely denoted them--are created. Yet few processes are so poorly understood. Perhaps, it might be said, that this lack of understanding is due to the apparently mundane nature of the topic. For no one wants to be connected with a merely "descriptive" science (Mises, 1951:137-138, 205-217). The mundanity, however, is only apparent; for as will become more obvious in the course of this study, there are few aspects of the scientific enterprise which possess the challenge of semantically responsible description. Nowhere is there a greater need for rationality.

Rationality in the development and responsible use of the tools of description, however, by definition entails an analytic awareness of their nature; the roles they play in the various stages of inquiry; the variety of such tools that exist and can be generated, and their utility for given ends. Rationality presupposes choice. To the extent to

which the user of descriptive techniques is unaware of these factors--and his responsibility in using such techniques--then choices are foregone and the user's potential for rational action relative to their deployment is radically diminished. In consequence, an important (if not determinant) aspect of research and theoretical activity is reduced to mere ritual. Convention is necessary, as Michael Polanyi (1970:42-62), W. V. Quine (1964:322-345) and others (for instance, see Russell, 1948; Reichenbach, 1938; Dewey, 1958; Popper, 1968:49-56; Lundberg, 1964) have shown. Ritual, however, should have no place in science.

CHAPTER II. THE DESCRIPTIVE ACT: EMPIRICISM IN THE SOCIAL CONTEXT

Some Preliminary Remarks

The overarching commitment of this dissertation has been to the principle that there is need for a nontrivial, integrative methodological perspective. As was developed in the course of Chapter I, at the heart of such a methodological perspective lies the problem of description; the problems surrounding the linguistic representation of matters of immediate experience. In order to clarify the nature of the problems involved, the problem of description was embedded in the re-presentational context; i.e., in the context of the descriptive act. In this context we can see the problem as one enhancing or detracting from the effectiveness of the larger re-presentational complex.

Components of the Descriptive Act

On pages 49-51 the descriptive act was broken down into some major components. These major components were shown to reflect a system of constraints within which the descriptive act occurred and, in doing so, was meant to reflect one aspect of the sui generis nature of the societal complex. Now we confront the descriptive act in a new setting; in terms of the methodologically central

problem of description. The nature of this problem entails that we take a more formal approach to the analysis of this basic act. As before, the descriptive act is seen to involve three major components; the parties to the act, the extralinguistic event (or experience), and the linguistic resource base.

The parties to the act

For reasons of simplicity, the parties to the act will involve a single observer/describer, denoted O/D, and a single hearer/interpreter, H/I. (Note: In their most useful context O/D and H/I are not necessarily distinct individuals. Rather they are roles which, when assumed, provide a strategy for dealing with the problems of description. This should be kept in mind throughout Chapters II and III.) The value of the symbolic abbreviations will also become more apparent as our thought line develops. However, their primary value is that of avoiding the elliptical sentence structures which often obfuscate natural language presentations.

The extralinguistic event

In essence, what is being discussed here is that which is being subject to description; the experience. As a matter of convenience the extralinguistic event will be denoted E. The nature of the extralinguistic event, as a theoretical

notion, and the meaning of the adjective "extralinguistic" will be more thoroughly discussed in a later section when attention is directed to the matter of metalanguages.

The linguistic resource base

Denoted L, the linguistic resource base is herein conceived to be symbolic medium within which a description of E is to be "constructed". The reason for not considering the representation itself as a primary component of the descriptive act will become apparent as the presentation proceeds. As was developed in Chapter I, L is conceived to be the social institution within which communication occurs. It is further viewed as analytically independent of any speech act produced in it, and as "rich" enough to bring closure on the descriptive act.

Slightly modifying the frameworks of Vasiliu (1972) and Carnap (1967), L is minimally seen as being composed of:

II:A1 A set of basic formatives (V) from which expressions can be constructed.

(The nature of these formatives may vary as to purpose. They may be phonemic in which case V would be the phonemic base for L. They may be lexical items, in which case V would be the lexicon for L. Finally the formatives might be basic sentential forms as in Carnap's (1967) semantic system or Chomsky's (1965) transformationalist grammar. Chomsky

(1966) terms these as "kernel" sentences. In our consideration of the primary ontological layer, with its externalistic perspective, this latter approach may be very beneficial.)

II:A2 A set of formation rules (FR), or syntax, within which:

- a. Elements of V can be combined to produce (or recognize) syntactically acceptable strings, say $\alpha_1, \alpha_2, \dots$, which can alternately be termed well formed strings or expressions,¹ and
- b. Expressions can be combined to form more complex expressions, and

II:A3 A set of re-presentational rules (RR) which allow for the construction and interpretation of expressions for the purposes of the transmission of L-a posteriori forms of knowledge.

These re-presentational rules will be investigated more closely in Chapter III. In order to help understand the above I will now investigate some of the basic concepts.

¹To say that a string of formatives is an expression in L is equivalent to saying that it is syntactically correct, or a well formed string. This has some independence from the fact of whether or not the given expression has any meaning. One can arbitrarily generate expressions without concern for their sense.

Strings, construction and syntax An arbitrary

string α , as the term suggests, is simply a finite sequence of primitive symbols (not necessary distinct) composed of the elements of V , the formatives provided in L . The symbols contained in α , along with their arrangement, defines the composition of α . The number of basic formatives which enter the composition of α will be termed the length of α and may be denoted $L(\alpha)$.

The act of composing such a string we shall term the construction of the string α in L . The act of constructing α presupposes the sequential selection of the elements of V which define α 's composition. Table 2.1 has been "constructed" to suggest the number of strings of length n that can be constructed from a formative base of cardinality N , for extremely small values of n and N . These results gain "Cartesian" significance when one realizes that an average four-year old child is estimated to have a working vocabulary of over five thousand words (Pei, 1966:124). The process of enumerating possible strings at this value of N becomes extremely formidable for strings of even average sentence length.

Now, presuming V to be of finite cardinality (a rather generous presumption), let Σ be the class of all strings which can be constructed utilizing the elements of V . This set would include:

Table 2.1. The combinatorics of string construction

L(α)	Cardinality of V						N
	4	5	6	7	8	...	
2	16	25	36	49	64	...	N^2
4	256	625	9,296	2,401	4,096	...	N^4
6	4,096	15,625	46,656	17,649	262,144	...	N^6
8	65,536	390,625	1,679,616	5,764,801	16,777,216	...	N^8
.
.
.
n	4^n	5^n	6^n	7^n	8^n	...	N^n

a subset Σ_1 , composed of all strings of length 1, i.e.,

$$\Sigma_1 = \text{def.}\{\alpha_{1j} : L(\alpha_{1j}) = 1, j=1,2,\dots\}$$

a subset $\Sigma_2 = \text{def.}\{\alpha_{2j} : L(\alpha_{2j}) = 2, j=1,2,\dots\}$

⋮

a subset $\Sigma_n = \text{def.}\{\alpha_{nj} : L(\alpha_{nj}) = n, j=1,2,\dots\}$.

These subsets generated on the basis of string length would form a partition of Σ such that

$$\Sigma \equiv \bigcup_{i=1}^h \Sigma_i, \Sigma_i \cap \Sigma_j \equiv \emptyset, \forall i, j$$

where \emptyset is the empty set and the inverted A is to be read "for all choices". Given these concepts we may now come to appreciate some features of the syntax, FR.

In its simplest sense the syntax of a language,¹ in this case given in L, operates as a set of constraints upon what strings, when constructed, will be considered as expressions or as well formed. In essence this means that, if we let \mathcal{L} be the class of all expressions in L (i.e., all strings constructed in accordance with the FR) then we would generally expect the following conditions,

$$\mathcal{L} \subset \Sigma, \mathcal{L} \cap \Sigma \neq \emptyset.$$

In general we would also expect this to be true at each value of string length in \mathcal{L} and Σ .

To see this in a rather concrete instance, consider a basic logical system, L', with

$$V' = (P, Q, T, V).$$

¹The complex syntactical rules of a language represent a set of constraints. As with all human laws or rules, such constraints give structure to the system and determine a conformity, by which predictions of behavior can be made. The syntactical constraints of a language ensure that, to some extent, we know already what will be said, or written, in a given situation or at a certain point in a speech or text. We do not know exactly what, but we know something about it (Cherry, 1970:117-118).

Define the basic formation rules as follows:

- A. P and Q are atomic expressions.
- B. T and V are junctors or expressional connectives.
- C. P and Q are expressions in L' .
- D. If η is an expression in L' , then $T\eta$ is an expression in L' .
- E. If η_1 and η_2 are expressions in L' , then $\eta_1 V \eta_2$ is an expression in L' .

The consequences of even this simple set of formation rules is quite amazing. For example, since P is an expression in L' , then TP is an expression in L' . Similarly, since TP is an expression in L' , then TTP is an expression in L' . If we allow $T^K P$ to be an atomic expression P preceded by K instances of the symbol T , then $T^K P$ is an expression for all finite values of K . It should also be obvious that PVQ is an expression. Since this is an expression then $T(PVQ)$ is an expression. A suggestive list of strings which would be considered as well formed in L' are:

$P, Q, TP, TQ, TPVQ, PVIQ$
 $TPVIQ, T^K P, T^m Q, T^K PVW, PVI^m Q$
 $T^K PVI^m Q, PVP, PVIP, \text{etc.}$

To more effectively view the constraints which are operative under the formation rules given above, we will

consider strings constructed from V' of lengths two and three. Ignoring the formation rules we find that we can construct $4^2 = 16$ distinguishable strings of length two.

Thus, Σ_2^1 is given as:

PP, PQ, PI, PV

QP, QQ, QI, QV

TP, TQ, TI, TV

VP, VQ, VI, VV .

This may be compared to \mathcal{L}_2^1 as generated under the formation rules where \mathcal{L}_2^1 is given as:

TP, TQ .

Hence, there are quite strong constraints operating under this simple syntax. At string length three, however, the constraints are more radical. For instance, at this length there are $4^3 = 64$ possible strings which could be constructed.¹ This is compared to the six strings which would be considered as well formed under the formation rules given above. These would be

¹The linguist often finds himself in the position of having to do the opposite of what we just accomplished. He has a collection of strings which he must suppose are acceptable, and from these he must abstract the formation rules under which they were constructed (see Chomsky, 1965).

PVP, PVQ, QVP, QVQ, TIP, TIQ .

Of course, on top of the constraints imposed upon string construction by the syntax, are those imposed by the semantic aspects of language use (compare with pages 24-41), or as I have specifically noted, the rules of re-presentation.

Semantic stratification . Linguist Charles F.

Hockett (1968:13) has noted that a universal feature of human language is its "reflexiveness". That is, in a language one can communicate about language and about communication. Referring to the communication patterns of Apis mellifera, Hockett notes "Bees dance about sites, but they cannot dance about dancing" (Hockett, 1968:13). The notion of linguistic reflexivity has also received a great deal of attention by mathematicians and philosophers such as Hermes (1973:48), Tarski (1956), Watanabe (1969), Carnap (1967), Bridgeman (1959), Kaminsky (1969) and Reichenbach (1938; 1966). In such contexts, however, the reflexive use of language is dealt with in terms of metalinguistics. In general we may define a metalanguage of level n (denoted M^nL) as a language which takes some aspect of a metalanguage of level $n-1$ ($M^{n-1}L$) as its object. Relative to M^nL , $M^{n-1}L$ is extralinguistic. The term "extralinguistic" can thus be used in a very relative sense which makes it compatible with my discussion of linguistic vulnerability on pages 77-78.

It should be noted that the classification of a particular expression into a given level metalanguage is a functional one; i.e., dependent on the particular use to which the expression is being put (Carnap, 1967:145-172). Hence, we are not talking about the partition of L into n separate languages. These notions will become clearer as they are used.

Construction and displacement Finally, we must note that any act of construction is simultaneously an act of displacement. That is, at the point of construction, in producing a string of a given composition and length, the actor physically displaces other strings of distinct composition and length which might have been constructed at that point. This relation among the "constructable" strings of L will be important in later chapters.

This is admittedly a very simplistic formulation of L, but for my immediate requirements it will serve quite adequately. My immediate concern is not the development of a theory of language, but rather to point out some aspects of its use in a very specific form of discourse; namely the descriptive act. The primary requirement is that L be some symbolic medium, that is to be used for the expression of communicative intents; as a pragmatic vehicle, to use C. Morris' (1946; 1964) now classic designation. (For excellent discussions of language and pragmatics see, Rommetveit, 1968; Berlyne, 1965; Dewey, 1958. More

logical-philosophical presentations are provided by Kaminsky, 1969; Carnap, 1967; Vasiliu, 1972; Reichenbach, 1966. Of course the classical presentation was that provided by Charles Saunders Peirce, 1933. In terms of explicit theories of language the reader is invited to consider the following sources: Lehmann, 1972; Oller, 1971; Lamb, 1966; Burling, 1970; Chomsky, 1965; Bartsch and Vennemann, 1972; and Fodor and Katz, 1964; Hopcroft and Ullman, 1969.)

Some Presumptions, Relations and Definitions

Having briefly examined the fundamental components of the descriptive act, we may now begin to more definitely consider its nature. Instrumental in this study are the following presumptions:

- II:B1 That O/D and H/I are both competent in L. This includes both linguistic competence (cf. Chomsky, 1965:3-15)--that is O/D and H/I are capable of a) forming expressions in L, and b) recognizing expressions in L--and communicative competence (see Chomsky's discussion of performance, 1965: 3-15; Habermas, 1972:115-148; and Hymes, 1974: 12-25); that is O/D and H/I are capable of using the RR in conjunction with V and FR to produce meaningful expressions, understood by all members of the speech community (Gumperz, 1968:

381-386). Here O/D and H/I form a minimal speech community. More specifically, however, it is presumed that O/D and H/I possess representational competence.

II:B2 That E is representable in L; i.e., a representation can be constructed.

II:B3 That O/D had access to E; i.e., experienced it, while

II:B4 H/I had no access to E,

II:B5 That O/D constructs a representation of E, $\mathcal{L}(E)$, in L for H/I, and

II:B6 That H/I has access to $\mathcal{L}(E)$.

It must be noted at this point, that II:B3 and II:B4 define the particular nature of the problem as constructed here. In essence the consequence of these stipulations is that O/D has no access to the act of ostension. This will be an important factor in later sections. These preliminary assumptions may be represented as in Figure 2.1.

Further, it is presumed that:

II:B7 E is prior to $\mathcal{L}(E)$; that is $\mathcal{L}(E)$ is, for H/I, a form of knowledge a posteriori in the Kantian sense (Kant, 1966:1); specifically, L-a posteriori.

II:B8 That $\mathcal{L}(E)$ is an expression in L, and that

	O/D	H/I
L	Competence	Competence
L(E)	Construction	Access
E	Access	No Access

Figure 2.1. A depiction of some preliminary presuppositions

II:B9 H/I and O/D are aware of each other's competence in L.

Item II:B7 is an item of interest because it precludes another kind of representation which is also very important in scientific endeavors, i.e., the act of instruction wherein a nonexistent state-of-affairs is linguistically represented in order that this state-of-affairs might be produced (cf. Brown, 1972:77-78). Such instructional representations, as is exemplified by Bridgeman's (1959) notion of the "operational definition", lay at the heart of the scientific enterprise. Although I do not have the time to pursue this point, it is quite likely that this ability to reproduce a certain experience, as through experimentation, has served as a surrogate for inability to make all experiences ostensibly available to all members of the scientific community. Relatedly, and relevant to a point

considered on page 73, it is quite likely that this ability to work with "producible experiences" has had something to do with the success of impoverished linguistic forms in the physical sciences. When a group of individuals operate in a realm which ostensibly available to all of them, it is quite unlikely that they will construct elaborated linguistic codes to deal with that environment. Much of what is ineffable is still shareable in this context and there would be little motivation to try to push back the limits of ineffability. Where experiment can successfully operate as a surrogate for ostensive availability is quite likely that similar trends will occur. Physicist Norman Campbell (1952:84) has made some reference to this fact as it operates in experimental physics.

Further distinctions

We must now observe the following definitional distinctions. First, we shall consider the descriptive act to be the sharing of E by O/D and H/I by means of $\mathcal{L}(E)$, in L. This definition is made to distinguish the descriptive act from the act of description, given above as II:B5, which is construed to be O/D's construction of $\mathcal{L}(E)$ in L. Further, both of the above are to be distinguished from the description itself, which is the linguistic representation $\mathcal{L}(E)$; the expression constructed by O/D in L. This

representation is viewed as having a propositional nature, by which I mean that it is an asserted, E centered predication constructed for the purpose of conveying the existence of a state of affairs. It has the characteristic of being true or false for E. The notation $\mathcal{L}(E)$ has been used to distinguish this assertion from the simple string \mathcal{L} .

Finally there is H/I's act of interpretation which brings closure on the descriptive act. These are critical distinctions. I must also add a terminological note at this point; namely, that E will be referred to, particularly in later sections, as the substrate of $\mathcal{L}(E)$.

It should now begin to be obvious as to why the labels observer/describer and hearer/interpreter have been adopted to denote the two participants in the descriptive act. These are implied in Figure 2.1. Each element of each label describes the key relationships involved in the descriptive act. Thus, observer/describer encapsulates this participant's access to the extralinguistic event, his role in the construction of $\mathcal{L}(E)$, and his relationship to H/I. The label "hearer/interpreter", on the other hand, implies that the primary experience available to H/I is $\mathcal{L}(E)$, and that this participant's primary role is first, to receive the physical form of $\mathcal{L}(E)$, i.e., to hear it (whether or not the actual form is auditory is not essential here; it may be written or in some other form--the term "hearer" is used

figuratively here) and, then, to interpret it. The act of interpretation by H/I, however, is not so well defined. It has a very important role, however, in our attempt to come to grips with the problem of description and before entering into a consideration of this act's nature we would do well to point out its role in the broader context.

Explicating the Problem of Description

Using the conceptual tools developed thus far we can now explicate the problem of description itself, as was first noted in the Introduction to this study. Central to this explication is the bifurcation of the problem into two suggestive component problems:

- II:C1 O/D's problem of employing the elements, V, FR, and RR of the linguistic resource base L, to construct a representation of the substrate E for H/I under the conditions defined by II:B2-II:B⁴, and
- II:C2 H/I's problem of interpreting the constructed representation $\mathcal{L}(E)$ to which H/I has access.

Since H/I is the primary consumer of $\mathcal{L}(E)$ and hence a fundamental part of O/D's problematic, we shall begin with an analysis of H/I's interpretive problem first. We shall, in other words, seek to understand the former problem in terms of the latter.

The Problem of Interpretation:

It's Context and Logic

The context of interpretation: A minimal setting

Any act of interpretation, whether in the confines of the scientific community or in the broader societal complex, seems to operate within the context of several principles and conditions which make the acquisition of L-a posteriori forms (and thus their redistribution) an epistemologically feasible activity. Relative to the situation as defined by items II:B1-II:B9, these are formally given as:

- II:D1 The principle of independent occurrence, or
H/I's belief that something, E, was the case,
independent of H/I's access to it.
- II:D2 H/I's knowledge that O/D had access to E (see
II:B3).
- II:D3 H/I's knowledge that O/D is competent in L (see
II:B9).
- II:D4 H/I's knowledge that O/D constructed $\mathcal{L}(E)$ in L
(see II:B5).

With reference to component II:D3, I refer the reader back to Cicourel's comments concerning the "imputation of competences" among interacting actors (see page 32). II:D2 and II:D4 should not be problematic. Some consideration, however, should be given to II:D1.

The necessity of item II:D1 stems from the rather simple fact that H/I, under condition II:B4, has been denied access to E. This fact, unless we want to bring a rather trivial form of closure on the descriptive act, entails that we equip H/I with this minimal metaphysical assumption. This very innocent assumption, in combination with II:D2, is, in a very real sense, reflective of man's commitment to linguistically shared experience, a commitment society ensures (and as is ideally exemplified by the descriptive within the scientific community). It is a commitment to a platonic form of realism: a point which fundamentally underlies the Sapir-Whorf Hypothesis (Whorf, 1970:212-214; Sapir, 1949:3-23). It is an assumption which undermines the doctrine of nominalism in all but the most restricted settings (Dewey, 1958:184-185).

Assumption II:D1 has also received much attention in the philosophical community; albeit in more impersonal forms. For instance Wittgenstein (who Ayer, 1966:4-5, credits as being the wellspring of logical empiricism) has noted:

The 'experience' that we need in order to understand logic is not that something or other is the state of things, but that something is: That, however, is not an experience. Logic is prior to every experience--that something is so (Ayer, 1966:4-5).

It also finds an alternative expression in Whitehead's (1971: 49) "general fact" that "something is going on; there is an

occasion for definition" and Dewey's (1958:1) exclamation "A bare event is no event at all; something happens. What that something is, is found out by actual study." Since these eminent philosophers have found it necessary to provide this assumption in their systems, it seems rather minimal that I do the same for H/I. However, since I must accord the reader the same right of denial that was accorded to H/I, the reader is free to explore the consequences of denying II:D1 (cf. page 96).

Schutz (1973:11-12) has noted two other perspectives which tend to operate in situations such as that involved in the descriptive act (specifically the act of interpretation):

- i. The idealization of the interchangeability of standpoints: I take it for granted--and assume my fellow man does the same--that if I change places with him so that his "here" becomes mine, I shall be at the same distance from things and see them with the same typicality as he actually does; moreover, the same things would be in my reach which are actually in his. (The reverse is also true.)
- ii. The idealization of the congruency of the system of relevances. Until counterevidence I take it for granted--and assume my fellow man does the same--that the differences in perspective originating in our unique biographical situations are irrelevant for the purpose at hand of either of us and that he and I, that "We" assume that both of us have selected and interpreted the actually or potentially common objects and their features in an identical manner, i.e., one sufficient for all practical purposes (Schutz, 1973:11-12).

Schutz immediately went on to note that "It is obvious that both idealizations, that of the interchangeability of the standpoints and that of the congruency of relevances--together constituting the general thesis of reciprocal perspectives--are typifying constructs of objects of thought which supercede the thought of objects of my and my fellow-man's private experience" (Schutz, 1973:12). I have somewhat included these notions in my concept of re-presentational competence and they need not be formally entered here. It should be noted, however, that when adjustments are made in the linguistic resource base in the scientific community it is predominantly done about precisely these two "idealizations" (cf. Carnap, 1967:241-242). The secondary level of ontology is involved here.

A final point to be noted is that all that is "spoken" may not be by O/D. While $\mathcal{U}(E)$ is considered to be the sole product of O/D's powers of articulation in L, H/I may use his competence in L to aid in bringing closure on the descriptive act. As a point of fact, we will allow H/I two essential privileges:

II:D5 The right of denial; that is the right to assert the falsity of $\mathcal{U}(E)$, and

II:D6 Access to the interrogative form (e.g., "What do you mean?").

These two privileges form a determinant part of the context

in Charles H. Cooley's (1926:68) reflection that we "can record behavior and handle the record by statistics but I can see no way of avoiding the ultimate question, What does it mean?" In general, however, our access to these two privileges is decidedly and practically finite.

The logic of interpretation: Construction, displacement and ontology

At the primary ontological level (the level in which the kernel ontology is expressed) we find a kind of primary logic which seems to be universal to acts of interpretation. When viewed from the analytically isolated perspective of the primary logic, every description is of a bifactual nature. First there is the objective fact that the linguistic representation seeks to portray. This objective fact preceded the construction of the description and presumably placed severe restrictions upon what strings would be considered "re-presentationally well formed". Secondly, there is a logical fact which is given in the act of re-presentation itself, and in the right of H/I to pursue that acts objective factuality, as given in II:D5 and II:D6. By virtue of its logical factual nature, every act of description is preceded by a space which was given in O/D's capacity for re-presentation; a capacity which, as given on page 53, was existentially prior to E itself. This descriptive space,

or linguistic uncertainty structure (see pages 64-65), provides the Cartesian environment for particular acts of description. Such acts of description are merely realizations of what was a priori possible for re-presentation. It is this logical factual nature which is of primary interest in the following pages.

Now, to facilitate the presentation and assuming that we are at least as rational as H/I, let us assume the role of H/I in the descriptive act. If we begin with the consideration of II:D3 and II:D4, limiting our considerations to O/D's linguistic competencies only (review page 111), then the following facts are given.

First, by definition, we know that O/D is capable of using the elements of V in conjunction with the FR to construct an indefinite number of well formed strings or expressions. This linguistic competence, abstracted from any concern for pragmatics or semantics, is represented by the class of all well formed strings \mathcal{L} . By II:B1 we also have this competence and would require it to implement our privileges as given in II:D5 and II:D6. Secondly, we know that O/D did construct ℓ in \mathcal{L} , and that it is ℓ to which we have access. This act of construction is clearly equivalent to a selection from \mathcal{L} . Viewed either way, however, as a construction or selection (construction only being selection at a lower level), this syntactic aspect of the

act of description may be properly viewed as a Cartesian outcome; the volitional realization of an a priori syntactic potential.

From these two facts, and our knowledge of L, we also know that, by constructing ℓ , O/D volitionally displaced all other expressions in L (or \mathcal{L} ; see page 110) which bear a composition distinct from that of ℓ . This relation, i.e., that of displacement, is a relation that holds between ℓ and every other expression in \mathcal{L} , at the point of construction.

The class \mathcal{L} , however, represents more than O/D's syntactic potentials. It also represents O/D's general communicative capacities; his potential for interrogation, for exclamation, for directive speech (Ross, 1968). Following Wittgenstein (1968:6e-14e) we can view \mathcal{L} as a kind of linguistic tool box at O/D's disposal. In a more specialized sense, however, \mathcal{L} is a reflection of O/D's re-presentational capacity. It is in this context (and in the context of O/D's re-presentational competence) that ℓ , a string, becomes $\ell(E)$, a representation. It is in this context that its construction becomes significant. More critically, however, it is in the context of O/D's capacity for re-presentation that the displacement itself begins to bear a semantic burden. For the kernel ontology evolves out of the derivative interpretive belief that this displacement represents something other than a linguistic fact; that the

displacement that occurred, by virtue of O/D's construction of $\mathcal{U}(E)$, is itself a re-presentation of something. The description O/D constructed for us in L, will only have semantic value to us, if the displacement its construction embodies is reflected in its semantic substrate. It is this kernel ontological implication which is active in every act of interpretation, regardless of "higher level" ontological divergences, and regardless of whether the re-presentation is couched in some natural language (such as L is deemed to be) or in explicit re-presentational system which is embedded in a "larger" natural language (a possibility not denied by my presentation). It is also this rather simple ontological implication which finds its formalization in the works of the pragmatists and the logical positivists (for instance, in the theory of verifiability).

The kernel ontology, however, is also the generative source of indeterminacy in acts of re-presentation. For by giving semantic significance to the displacement, we leave open questions concerning the semantic organization of displacement relative to O/D's re-presentational capacities. Alfred North Whitehead addressed the nature of this indeterminacy quite directly in his text Process and Reality: An Essay in Cosmology.

There are no brute, self contained matters of fact, capable of being understood apart from interpretation as an element in a system. When-

ever we attempt to express the matter of immediate experience, we find that its understanding leads us beyond itself, to its contemporaries, to its past, to its future, and to the universals in terms of which its definiteness is exhibited (*italics mine*) (Alfred North Whitehead, 1969a:18).

The point is that every proposition refers to a universe of factuality exhibiting some general systematic metaphysical character. Apart from this background, the separate entities which go to form the proposition, and the proposition as a whole, are without determinant character. Nothing has been defined, because every definite entity requires a systematic universe to supply its requisite status. Thus every proposition proposing a fact must, in its complete analysis, propose the general character of the universe required for that fact. There are no self sustained facts, floating in nonentity (*italics mine*) (Alfred North Whitehead, 1969a:14).

This "universe of factuality", as Whitehead has termed it, is the Cartesian environment elicited by O/D's construction of $\mathcal{U}(E)$. The kernel ontology, however, only implied its existence and left its nature unspecified. A more "complete analysis" requires that we consider the ramifications of $\mathcal{U}(E)$'s propositional nature and in conjunction with the elements of the context of interpretation; particularly the privileges accorded to us in II:D5 and II:D6. These considerations will take us to an initial specification of the primary ontological level.

Now, by II:D1 we know that something, E, was the case and that, by II:D2, it was cognitively available to O/D. By virtue of II:D3 and II:D4 we also have reason to believe

that $\ell(E)$ does portray "what was the case"; i.e., it is an effective re-presentation of E . This would lead us to believe that other possible re-presentations were displaced by what was the case. To pursue the nature of the displacement, however, we may use our basic privileges. By II:B4 we have been accorded the right to deny the accessible description $\ell(E)$, which O/D asserts to be a representation of E . That is, we have the privilege of being able to deny the objective factuality of $\ell(E)$. Therefore, we shall use this privilege and assert $\neg\ell(E)$ with the knowledge that " $\neg\ell(E)$ " is a statement which is true when $\ell(E)$ is false and false when $\ell(E)$ is true. We have asserted $\neg\ell(E)$ to be true and therefore must consider $\ell(E)$ to be false.

Now recalling our earlier discussion of the reflexive property of language (see page 109) and the semantic stratification of L it induces, we may note that our assertion of $\neg\ell(E)$ is a metalinguistic statement. More directly, if we view O/D's $\ell(E)$ as being an expression in M^1L , a representational resource base (functionally parallel to my earlier notion of a "collective representation"), then we might view our own expression $\neg\ell(E)$ as being an expression in a M^2L resource base. But by II:D1, something was the case. Thus, $\neg\ell(E)$, by merely stating that something (the truth of $\ell(E)$) was not the case seems to be lacking as a representation E . This is especially true if we recall that,

by II:B2, E is representable in L, that O/D had the capacity to construct it, and that it would be contained in \mathcal{L} . More specifically, it would be contained in \mathcal{L}^1 , the class of all strings constructable in M^1L .

That is, there presumably exists, in $\mathcal{L}^1 \subset \mathcal{L}$, an expression \mathcal{L}' that when asserted with respect to E, say $\mathcal{L}'(E)$, would be true whenever our denial $\neg \mathcal{L}(E)$ was true. The assertion $\mathcal{L}'(E)$ is said to fill the vacuum of denial and the assumption of its existence I shall term the principle of vacuousness under denial. Thus (a matter for further exploration, we seek an expression which, when asserted, is logically equivalent to $\neg \mathcal{L}(E)$, under the law of contradiction, but is not identical with $\neg \mathcal{L}(E)$.¹ Such an expression

¹When we deal with the notion of the denial, or negation, of an expression we generally have two approaches available. Both conform to the stipulation to the truth table definition of the negation of an expression as being another statement whose truth value is always opposite of the truth value of the statement negated. The first approach simply considers the negation of an expression to be the translation of that statement into its negative form; i.e., into a negative statement of the same metalinguistic order. For example, following Hintikka (1970a:6), define

A = def the wind is blowing, and

$\neg A$ = def the wind is not blowing.

The second approach, the one we have adopted, views the negation of an expression to simply be a statement denying the truth of the original expression. For example, we might consider $\neg A$ to be the statement "The proposition 'the wind is blowing' is false." While equivalent to the first strategy under the truth table specification this second form is better suited to the problem of description. For example is we define

would be said to be incompatible with $\ell(E)$ in M^1L . If in addition to being incompatible to $\ell(E)$ in M^1L , we can construct a string which, when asserted, is equivalent to $T\ell(E)$ under the law of the excluded middle, such a string would be termed its ideal complement in M^1L . We assume that it is generally the case that not all incompatible expressions in M^1L are ideal complements. To specify the nature of such a complement we will have to approach the problem of description from O/D's role. From this position we can begin to more completely point out the nature of the primary ontological level. Before making this transition, however, some conclusions may be drawn.

In the first place we began our role as H/I with a consideration of the fact of O/D's construction of $\ell(E)$

$A = \text{def the temperature is 70 degrees fahrenheit,}$
 then the interpretation

$\neg A = \text{def the temperature is not 70 degrees}$

does not seem to convey much information.

The significance of the expression "under the law of contradiction" is that we are not yet ready to assert the universal substitutability of $\ell'(E)$ for $T\ell(E)$. For instance we are not ready to assert that $\ell(E) \vee \ell'(E) \equiv \ell(E) \vee T\ell(E)$, where the right side of the equivalence is a key component in the law of the excluded middle. Here, using the example already given, we would find the expression

$A^1 = \text{def the proposition 'the temperature is 70 degrees fahrenheit' is false,}$
 under the law of contradiction; i.e., $A \wedge A^1 \equiv A \wedge \neg A \equiv \emptyset$
 (where \emptyset is an ideal statement which is always false). It would not necessarily be so under the law of the excluded middle. For example, $A \vee A^1$ does not carry the "necessary truth" carried by $A \wedge \neg A$. The truth of $A \vee A^1$ is still "contingent" upon experience.

subsequent displacement all other strings in \mathcal{L} . As a consequence of this we noted that the kernel ontological implication was that this displacement was significant. Under the principle of vacuousness under denial we learned that, due to its propositional nature, the construction of $\mathcal{L}(E)$ generated a factual displacement as well. This is Whitehead's factual universe. Relatedly, Whitehead (1969b:15-16) has noted that "every actual occasion is set within a realm of alternative interconnected entities. This realm is disclosed by all the untrue propositions which can be predicated significantly of that occasion. It is the realm of alternative suggestions, whose foothold in actuality transcends each actual occasion." Further, he notes that an "event is decisive in proportion to the importance (for it) of its untrue propositions: Their relevance to the event cannot be dissociated from what the event is in itself"

The Problem of Representation:

Construction, Complement and Re-presentation

Earlier (page 116) we noted that the problem of description could be reduced to two smaller problems. One of these was the problem of interpretation which we just briefly examined. The other was the problem of representation; i.e., O/D's problem of employing the elements of V, FR, and RR of

the linguistic resource base L, to construct a representation of the substrate E for H/I under the conditions defined by II:B2-II:B4. We also said that this last problem could be better understood in terms of the problem of interpretation. We will begin this section by reflecting upon this point.

At the heart of the problem of interpretation, and a precondition for further "understanding" was the necessity of drawing out the ontological implications of displacement. On O/D's side, which we may now assume, this manifests itself as the pragmatic requirement of maintaining the validity of the displacement embodied in the construction of any given representation; to make sure that it is more than a linguistic phenomena; to make sure that it is a factual displacement as well. Although I believe it to be too simplistic for my overall system, the following statement by Richard von Mises (1951) strikes at the crux of the issue.

A factual statement has significant meaning if it is possible to describe in observational terms two different states of the universe--one that takes place when the statement is true, and another one when it is not (Richard von Mises, 1951:76).

This pragmatic principle has all too long been viewed as an issue one only confronts in "hypothesis testing". If, however, it does not also operate at the level of representation, then other levels of research relying on "lower order"

descriptive schemes are for naught. The finest statistics cannot salvage their utility.

Before proceeding into an examination of the problem of representation (O/D's role), another point is in order. Those techniques which rely on the use of natural language resources for the re-presentation of observations do generally imply significant displacement. This is perhaps due to our comfort in using them. Where they fail, however, is in the explicitness of the specification of what was displaced. They inform us about what the researcher confronted in his experience but not what he was prepared to confront. Because of their complexity natural languages usually suffice as mediums for re-presentation but not as re-presentational systems. We will return to this in the next chapter. On the other hand, those which rely on "quantitative" techniques for description often have well-defined ideal complements for any representation constructed within them; they provide definitive Cartesian environments. Their failing, as used, is that, under popular "data processing" techniques, a representation constructed in them may fail to have a valid displacement. As a result it fails to re-present at all and cannot be considered to be part of a re-presentational system. This is particularly true with regard to data produced under certain "data reduction" regimes which the sociological community has unfortunately inherited from its

educational and psychological kin. This, and data reduction in general, will also be discussed in Chapter III. One thing which must be learned by student of "quantitative" methodology is that measurement systems are first and foremost re-presentational systems (i.e., systems which provide definitive Cartesian environments for acts of representation and ensure valid displacement). The "assignment of numbers to objects" never assured any enterprise of being a scientific one.

Returning once again to the problem of representation, and in light of the comments made in the previous section, the problem of representation can be reduced from the problem of construction in L to the problem of selection from \mathcal{L} . It was noted that construction was only a lower order selection procedure (see pages 103-104, page 123). More specifically, if we consider M^1L to be a hypothetical re-presentational resource base, and \mathcal{L}^1 as the class of all strings generated under M^1L , then the problem of representation can be reduced to the selection and assertion of a string from \mathcal{L}^1 .

By II:B2 the extralinguistic event E is representable in M^1L ; i.e., a representation can be constructed. Put another way, there exists at least one string in \mathcal{L}^1 which would be true of E . It does not guarantee the uniqueness of the representation, however. Indeed, nonuniqueness is a necessary condition under the requirements of II:D6 and pragmatic

principle just elucidated. One cannot answer the question "What do you mean by ' $\ell(E)$ '?" by repeating $\ell(E)$.

Expressions in \mathcal{L}^1 which may be used to convey the same proposition are said to differ only "accidentally". Such "accidental" features are those that result from the particular way in which the propositional sign is produced" (Wittgenstein, 1968:33). Those expressions which differ only accidentally are said to have the same "essential" features,¹ namely the proposition which they all are capable of conveying.² On the other hand, there are expressions in \mathcal{L}^1 which may be said to differ in their essential features. They can be used to express different propositions. With

¹"A proposition is a term capable of signifying a state of affairs. To define a proposition as an expression which is true or false, is correct enough but inauspicious, because it easily leads to identification of the proposition with the statement or assertion of it; whereas the element of assertion in a statement is extraneous to the proposition asserted. The proposition is something assertable; the content of the assertion; and this same state of affairs can also be questioned, denied, or merely supposed, and can be entertained in other moods as well" (Lewis, 1971:49).

²A very similar notion is contained in the transformational linguist's notion of "deep vs. surface" structure elements. In general a member of a language community will possess the ability to symbolically represent the same thought in a number of ways (cf., Beechhold and Behling, 1972:122-129; Chomsky, 1965:16-17). Rather than "accident" differences, then, we would speak of "surface" differences.

these notions in mind we may ideally simplify our task by defining an equivalence relation on \mathcal{L}^1 which would partition \mathcal{L}^1 into distinct classes of expressions. Within each class the expressions could be said to differ only accidentally. Expressions taken from any two distinct classes would be said to differ essentially. We can produce a further simplification by selecting a single expression from each class and forming a new class of expressions which we might denote as $\underline{E}(\mathcal{L}^1)$.

The newly formed class $\underline{E}(\mathcal{L}^1)$ may itself be partitioned into two further subclasses. Of interest, here, is the class of expressions which can be asserted meaningfully of the given experience E . This new class we may denote $\underline{E}(\mathcal{L}^1, E)$. From this class we select a single expression which is to serve as a representation for E . Sticking to our earlier notation we will denote this string as ℓ and its asserted form as $\ell(E)$. Now, as before, we note that $\ell(E)$'s selection displaced the selection of every other expression in $\underline{E}(\mathcal{L}^1, E)$. We now wish to locate the organization in this displacement. In essence, in looking for the ideal complement of $\ell(E)$ in $\underline{E}(\mathcal{L}^1, E)$, we are looking for a subclass of expressions, say $\ell_1, \ell_2, \dots, \ell_k$, such that

$$\ell(E) \Delta \ell_i(E) = \emptyset \quad i, j=1, 2, \dots, k$$

$$\ell_i(E) \Delta \ell_j(E) = \emptyset$$

and

$$\ell(E) \vee (\ell_1(E) \vee \ell_2(E) \vee \dots \vee \ell_k(E)) \equiv \Delta .$$

Where \emptyset is a special proposition which is false in "all possible worlds" (Mates, 1972:335), while Δ is a proposition which is true in "all possible worlds". By the above we can see that each element of the complement (a factual complement to distinguish it from a mere set relationship) satisfies the criterion established earlier; i.e.,

$$\ell(E) \quad \ell_i(E) \equiv \ell(E) \wedge \neg \ell(E) \equiv \emptyset .$$

While, "in disjunctive form", the complement is logically equivalent to $\neg \ell(E)$ under the law of the excluded middle; i.e.,

$$\ell(E) \vee (\ell_1(E) \vee \ell_2(E) \vee \dots \vee \ell_k(E)) \equiv \ell(E) \vee \neg \ell(E) \equiv \Delta .$$

We will denote the collection $\ell(E), \ell_1(E), \dots, \ell_k(E)$ as $\underline{E}(\mathcal{L}^1, E, \ell)$.

It will generally be the case, however, the $\underline{E}(\mathcal{L}^1, E)$ will contain expressions which are incompatible with $\ell(E)$, but which are nonetheless not suitable for membership in $\underline{E}(\mathcal{L}^1, E, \ell)$. To understand this we will need to take a glance at some concepts in the secondary ontological layer.

Disjunctive forms, compossibility and descriptive dimensionality

The concepts of the secondary ontological level can best be introduced if we view $\underline{E}(\mathcal{L}^1, E)$ as containing a class of simple or "elemental" expressions. Such expressions would be viewed as irreducible to combinations of other expressions in $\underline{E}(\mathcal{L}^1, E)$ and all other expressions $\underline{E}(\mathcal{L}^1, E)$ can be viewed as complex expressions composed of these simpler forms. We now want to discuss some relatively elementary relationships which can obtain between such strings.

The first of these relationships is that of compossibility. Two expressions are said to compossible if they are not incompatible. That is the truth of one does not displace the truth of the other (Mates, 1972:340-341). If we view this set of expressions as being fairly well defined, then the dimensionality of a description constructed from that set as being the number of expressions in this set which can simultaneously be asserted to be true. If, for instance, all expressions of the set are mutually incompatible, then the dimensionality of a description produced under the full set would be one. If the dimensionality of the set were two, then the set could be partitioned into two subsets. Within each subset the strings would be mutually incompatible and with properties similar to the collection

$E(\mathcal{L}^1, E, \ell)$ as discussed above. Any pair of strings in which one is selected from each subset, however, would be compossible or logically independent. The number of expressions contained in a given dimension would be termed its power.

Assuming that $E(\mathcal{L}^1, E)$ is p dimensional,¹ with the i^{th} dimension being of power m_i , then our selected representation $\ell(E)$ can be assumed to have the form

$$\ell(E) \equiv \bigwedge_{i=1}^p \left(\bigvee_{k=0}^{n_i \leq m_i} \alpha_{ij}^{(k)}(E) \right) \bigwedge \dots \bigwedge \left(\bigvee_{k=0}^{n_p \leq m_p} \alpha_{pj}^{(k)}(E) \right)$$

where $i=1,2,\dots,p$ indicates dimension, $j=1,2,\dots,m_i$ identifies the expression, and the superscript k ($0 \leq k \leq m_i$) is an enumerative index designating the number of elemental expressions contained in the i^{th} component of the disjunctive form. Hence a component

$$\bigvee_{k=0}^{n_i \leq m_i} \alpha_{ij}^{(k)}(E)$$

designates a disjunctive form constructed by the successive disjunction of n_i expressions selected from among the m_i

¹By p dimensional it is meant that the class of elemental expressions contained in $E(\mathcal{L}^1, E)$ can be partitioned into p groups as described above.

expressions defining the i^{th} dimension. Such a component may be selected from among

$$\sum_{n_i=0}^{m_i} \binom{m_i}{n_i} = \sum_{n_i=0}^{m_i} \left[\frac{m_i(m_i-1)\dots(m_i-n_i+1)}{n_i(n_i-1)\dots 1} \right]$$

possible disjunctive forms in the i^{th} dimension.

Then, for all p dimensions of $\underline{E}(\mathcal{L}^1, E)$, the expression $\mathcal{L}(E)$, as defined above, represents a selection from (and a displacement of)

$$\prod_{i=1}^p \left[\sum_{n_i=0}^{m_i} \binom{m_i}{n_i} \right] = \prod_{i=1}^p 2^{m_i} = 2^{\sum_{i=1}^p m_i}$$

expressions. If $n_i=0$ for the i^{th} dimension, $i=1,2,\dots,p$, then we may say that the i^{th} dimension has been deleted. The number of dimensions for which $n_i \neq 0$ is said to be the effective dimensionality of the expression.

An expression whose effective dimensionality is one (in the i^{th} dimension), having the form

$$\bigvee_{k=1}^{n_i \leq m_i} \alpha_{ij}^{(k)}(E)$$

can be constructed in

$$\sum_{n_i=1}^{m_i} \binom{m_i}{n_i} = 2^{m_i-1}$$

different ways. If $n_i = m_i$ in such an expression, then it can be said that it expressed total indifference in the i^{th} dimension. The truth of such an expression is not contingent upon experience. If $n_i < m_i$, then the expression is factual or contingent upon the nature of the experience. The class of all such expressions for which $n_i = 1$ (i.e., the m_i elemental expressions defining the dimension, are said to be maximally contingent. An expression (whose effective dimensionality is one) which is neither maximally contingent nor expressive of total indifference is said to be simply contingent. There are

$$2^{m_i} - m_i - 2$$

such expressions which can be selected. Finally, the complement of a one dimensional expression composed of n_i elemental expressions is a disjunctive form composed of the remaining $m_i - n_i$ elemental expressions.

Assuming that the effective dimensionality of $\ell(E)$ is $q \leq p$ (and for some fixed set of dimensions--we are not concerned with the selection of q dimensions from p) and q effective dimensions are of powers m_1, m_2, \dots, m_q (assuming we are working with the first q dimensions to simplify matters), then $\ell(E)$ is selected from among

$$\prod_{i=1}^q \left[\sum_{n_i=1}^{m_i} \binom{m_i}{n_i} \right] = \prod_{i=1}^q (2^{m_i} - 1)$$

expressions of the form

$$\ell^i(E) = \bigwedge_{i=1}^q \left(\bigvee_{l=1}^{n_i \leq m_i} \alpha_{ij}^{(k)}(E) \right) .$$

Such an expression is said to express total indifference in the q dimensions if $n_i = m_i$ for all $i=1,2,\dots,q$. If $n_i = 1$ for all $i=1,2,\dots,q$, the expression is said to be maximally contingent in the q dimensions. Since

$$\binom{m_i}{1} = m_i$$

we may note that there are precisely

$$\prod_{i=1}^q m_i$$

such expressions. If we let $\Omega_i = (\alpha_{i1}, \alpha_{i2}, \dots, \alpha_{imi})$ define the i^{th} dimension for all i , then the set of all expressions (in q dimensions) for which $n_i = 1$ for $i=1,2,\dots,q$ defines a special relation among the q dimensions which is typically called their product. We have noted that the product of these q dimensions, then, would be a class of

$$\prod_{i=1}^q m_i$$

expressions having the form

$$\omega_i(E) \equiv \alpha_{1i}(E) \wedge \alpha_{2j}(E) \wedge \dots \wedge \alpha_{qk}(E) \quad .$$

An arbitrarily chosen component $\alpha_{ij}(E)$ of such a representation would be said to be its projection onto the i^{th} dimension (MacLane and Birkhoff, 1967:12).

We may denote the collection $\omega_1, \omega_2, \dots, \omega_{\pi m_i}$ as Ω . To facilitate later discussions, any maximally contingent expression in q dimensions will be termed a cellular representation. Such maximally contingent or cellular representations are of critical import since any expression of the form

$$\bigwedge_{i=1}^q \left(\bigvee_{k=0}^{n_i \leq m_i} \alpha_{ij}^{(k)}(E) \right)$$

can be expanded into the disjunction of

$$\prod_{i=1}^q n_i$$

cellular representations; its expanded cellular form. A knowledge of this fact makes the task of complementation much simpler. As an example consider an expression constructed in a two dimensional resource base

$$\Omega_1 = (\alpha_{11}, \alpha_{12}, \alpha_{13})$$

$$\Omega_2 = (\alpha_{21}, \alpha_{22}, \alpha_{23})$$

where the expression has the form

$$(\alpha_{11}(E) \vee \alpha_{13}(E)) \wedge (\alpha_{22}(E)) \quad .$$

Assuming the validity of the distributive law $(A \vee B) \wedge C \equiv (A \wedge C) \vee (B \wedge C)$ we get

$$(\alpha_{11}(E) \wedge \alpha_{22}(E)) \vee (\alpha_{13}(E) \wedge \alpha_{22}(E)) \quad .$$

Similarly, an expression of total indifference in these two dimensions

$$(\alpha_{11}(E) \vee \alpha_{12}(E) \vee \alpha_{13}(E)) \wedge (\alpha_{21}(E) \vee \alpha_{22}(E) \vee \alpha_{23}(E))$$

can be rewritten as

$$\begin{aligned} \Delta \equiv & (\alpha_{11}(E) \wedge \alpha_{21}(E)) \vee (\alpha_{11}(E) \wedge \alpha_{22}(E)) \vee (\alpha_{11}(E) \wedge \\ & \alpha_{23}(E)) \vee \dots \vee (\alpha_{13}(E) \wedge \alpha_{21}(E)) \vee (\alpha_{13}(E) \wedge \alpha_{22}(E)) \vee \\ & (\alpha_{13}(E) \wedge \alpha_{23}(E)) \quad . \end{aligned}$$

Similarly, it is assumed, our selected representation $\ell(E)$ can be expressed as

$$\ell(E) = \bigvee_{k=1}^{n < m_1} \omega_i^{(k)}(E) \quad .$$

We shall return to this shortly. A notion conceptually parallel to that of cellular representation is that of a point representation in a q dimensional cartesian product space.

A point representation would have the form

$$(\alpha_{1i}(E), \alpha_{2i}(E), \dots, \alpha_{qk}(E)) \quad .$$

A point representation and a cellular representation may be considered as propositionally equivalent.

Excluding the single statement expressing total indifference in the q dimensions, and the

$$\prod_{i=1}^q m_i$$

cellular representations, there are

$$\prod_{i=1}^q (2^{m_i-1}) - \prod_{i=1}^q m_i - 1$$

expressions which have a contingent or factual nature.

Should $n_i = m_i$ for the i^{th} dimension in such an expression, that expression is said to express total indifference relative to that dimension. From an earlier result we know that there are

$$\prod_{i=1}^q (2^{m_i-m_i-2})$$

expressions, among those of a factual nature, which show total indifference in no dimension; i.e., $n_i < m_i$ for all $i=1,2,\dots,q$. Hence there are

$$\prod_{i=1}^q (2^{m_i-1}) - \prod_{i=1}^q (2^{m_i-m_i-2}) - \prod_{i=1}^q m_i-1$$

expressions of a factual nature which show indifference in at least one (and at most $q-1$) dimensions, and which can be constructed in a resource base of q dimensions of powers m_1, m_2, \dots, m_q .

Now, we have assumed that the effective dimensionality of our selected representation $\ell(E)$ is q . To find its complement and determine the incompatible expressions comprising it we simply put $\ell(E)$ in its expanded cellular form, comprised of the successive disjunction of

$$\prod_{i=1}^q n_i$$

cellular representations. Parallel to the one dimensional case the complement of our expression $\ell(E)$ may be formed by the successive disjunction of the remaining

$$\prod_{i=1}^q m_i - \prod_{i=1}^q n_i$$

maximally contingent expressions. Each component cellular representation in this complement would be incompatible with $\ell(E)$ and the class of cellular representations in the complement augmented by $\ell(E)$ would define $\underline{E}(\mathcal{L}^1, E, \ell)$. Because of the obvious centrality of Ω in the analysis of the

displacement properties of any description generated in its q dimensions, we may consider Ω as the re-presentational system we would seek to specify.

Notes on indifference, uncertainty and the validity of displacement

Throughout the previous pages I have used the concepts of uncertainty and indifference quite frequently. Due to the ambiguity of the concepts, however, this distinction requires a brief examination. The essence of the distinction lies in temporal ordering and the purpose of the description.

Now the linguistic resource base $\underline{E}(\mathcal{L}^1, E)$ was noted to exist prior to the described experience and thus prior to the description itself. In this context an expression of the form

$$B(E) \equiv \bigwedge_{i=1}^p \left(V_{k=1}^{m_i} \alpha_{ij}^{(k)}(E) \right)$$

can be viewed as a statement of total readiness of O/D to describe the experience E ; it is an inventory of what O/D could say in $\underline{E}(\mathcal{L}^1, E)$ concerning E . In listing what can be said about E , prior to the occurrence of E , it is said to express O/D's linguistic uncertainty structure.

On the other hand, if we are given an expression of the form

$$B'(E) \equiv \bigwedge_{i=1}^p (V_{i=1}^{m_i} \alpha_{ij}^{(k)}(E))$$

as the description (i.e., as a form of L-a posteriori knowledge) then we may say that O/D is displaying some indifference with respect to the exact nature of E (as specifiable in $\underline{E}(\mathcal{L}^1, E)$).

A description in the form of $B'(E)$ also represents some critical decisions on the part of O/D. The first concerns the decision to specify such an indifference structure at all; to treat certain possible descriptive forms as somehow equivalent or not meriting distinction. The second realm of decision concerns the effective dimensionality of the expression and harkens back to Schutz's concept of the "idealization of the congruency of the system of relevances" (see pages 119-120). Why should certain dimensions be included in the descriptive form while others are deleted. These decisions are critical and can impact the validity of displacement in descriptive acts. This is especially true of decisions concerning indifference.

Pragmatics and Displacement in Re-presentational Systems

The success of the act of description, be it in a natural language or in a euclidean n-space, is predicated upon the validity of the displacement which that act embodies.

Such occur in all acts of description. Unless the displacement is more than an artifactual property, however, the act of description cannot be considered as a component of the larger re-presentational complex. The necessity of the scientific community's dependence on L-a posteriori forms has led it to not only seek valid displacement (as was reflected in Mises' pragmatic principle) but also to specify the nature of the displacement as well. The specification of this displacement occurs at three ontological levels; the primary, secondary, and ternary. The effect of specification at the primary and secondary levels is the creation of a re-presentational system. Such a system allows the researcher to not only convey what he did experience, but also what he was prepared to experience. It provides an effectively determinant Cartesian environment for any act of re-presentation. This it does by two stages. At the primary level, for a given act of description, it specifies the nature of the displacement in the external form of its ideal complement. At the secondary level it becomes concerned with the internal organization of the displacement.

Within a well-defined re-presentational system the pragmatic principle must be altered from one only concerned with the displacement of factuality (as in Mises, formulation) to one concerned with the validity of specific displacements within the system; all possible displacements, in fact. This

generalization is the direct ramification of the principle of vacuousness upon the pragmatic principle noted earlier. If a particular displacement cannot be defended in the manner specified by the pragmatic principle, then the displacement is pragmatically trivial and may be considered as a point of indifference for those who rely upon the observer/describer's use of the system as a source of L-a posteriori knowledge.

Concluding Remarks

In this chapter I have pursued a very elementary study of the descriptive act and the problems it engenders. The treatment was naive and incomplete. Many technicalities were omitted which would be necessary for a thorough analysis. For instance, following Watanabe (1969) it could have been shown that the logic of re-presentation can be viewed as a model for certain algebraic structures; in particular Boolean and non-Boolean lattice structures (MacLane and Birkhoff, 1967:482-505). All acts of description imply the existence of such structures through their kernel ontology. Their form is simply indeterminant in many cases. Relatedly, and associated with our concern for the "validity of all possible displacements", there is a great need to explore the combinatorial properties of finite re-presentational systems. Although we may like to believe otherwise, all

works in sociology have been based in discrete, finite representational systems. If we ever want to become adept at "data reduction", we must also gain expertise in enumerating the possibility structures such data reduction procedures produce and the manner in which they effect displacement properties.

Regardless of the "preliminary" nature of this chapter, however, I have introduced certain notions which will be useful in the next chapter. Here the concept of re-presentational system will be embedded more deeply into areas of methodological concern. Specifically, we will become concerned with the role of re-presentational systems in theory construction, induction and "data" reduction. The notion of "valid displacement" will be critical throughout. Figure 2.2 has been constructed to schematically summarize the results of this chapter.

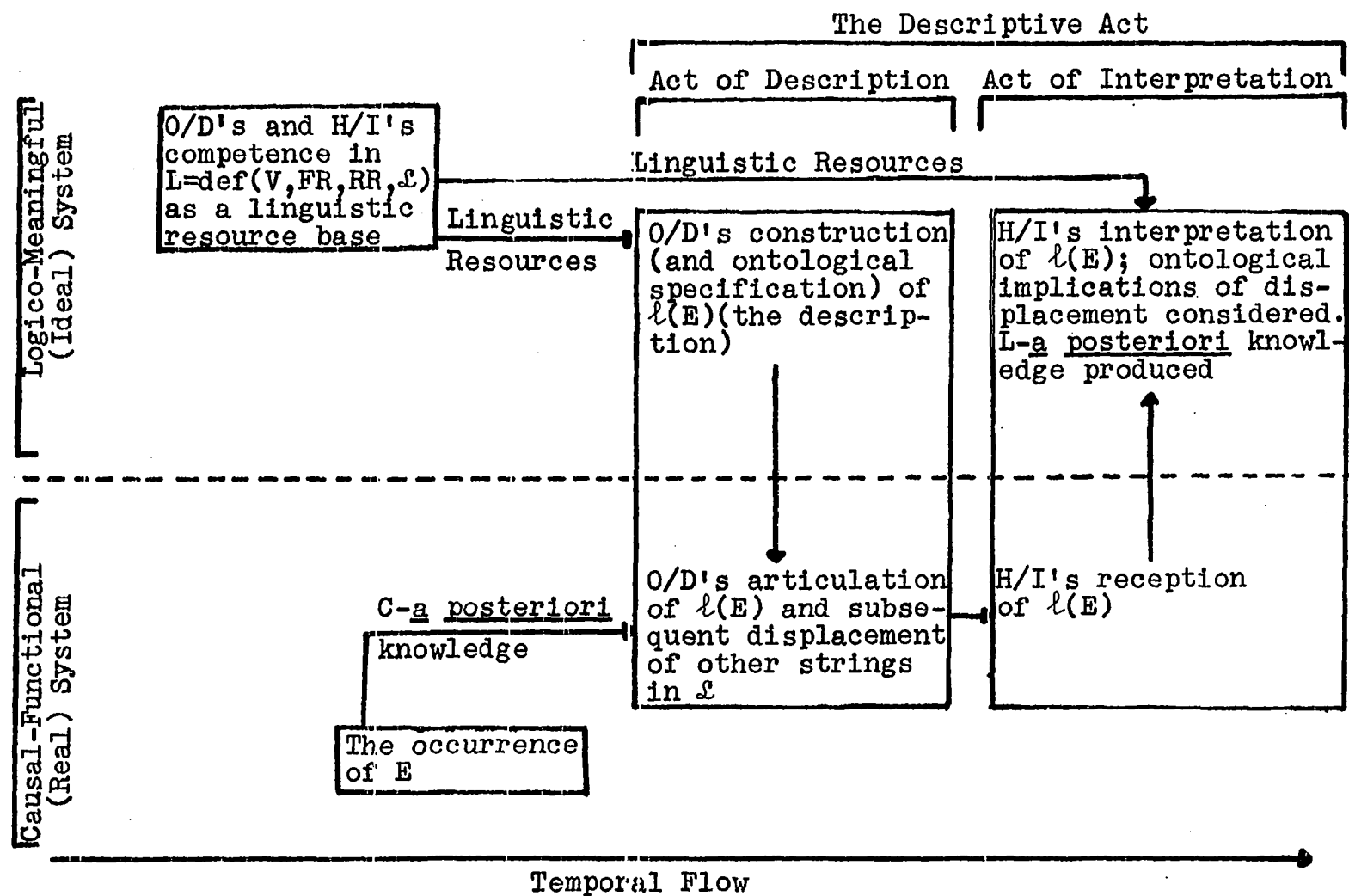


Figure 2.2. The major components of the descriptive act and their sequential relationships

CHAPTER III. FINAL NOTES CONCERNING THEORY, REDUCTION AND RE-PRESENTATIONAL SYSTEMS IN THE SOCIAL SCIENCES

. . . all the concepts of theoretical knowledge constitute merely an upper stratum of logic which is founded upon a lower stratum, that of the logic of language.

.

All theoretical cognition takes its departure from a world already performed by language; the scientist, the historian, even the philosopher, lives with his objects only as language presents them to him.

Ernst Cassirer (1953b:28)

Some Preliminary Remarks

Throughout the first two chapters of this dissertation I have explored the nature and ramifications of the simple descriptive act. I have noted that this act was an integrative starting point for any attempt to develop a generic methodology, one capable of articulating, in a nontrivial way, the close-knit kinship of the entire gamut of existing methodological techniques. Its integrative nature was said to stem from the facts that:

1. The least form of scientific experience is L-a posteriori in nature,
2. The problem of description confronts all approaches to sociological knowledge, and
3. That the descriptive act expresses a core ontology

(the kernel ontology) about which other (divergent) ontological forms evolve.

In Chapter II we examined the extent to which these facts lead us to a concern for re-presentational systems. When we begin to conceive of the sociological community as a system designed for the acquisition, construction and re-distribution of L-a posteriori forms of knowledge we can see that such re-presentational systems play two major roles. First, they provide a systematic basis for communications concerning phenomena of theoretical interest. This they do by providing definitive Cartesian environments for acts of description; environments with well-defined displacement properties. Built upon the foundations laid by this first role is the second; such re-presentational systems provide a contingency base for higher order theoretical activity. In this chapter we will give a very exploratory analysis of this second role, and discuss its implication for theoretical activity in the social sciences.

Theory and the L-a posteriori:

Some Basic Principles

Theoretical activity arises out of the necessity of being able to anticipate occurrences in the real world: It arises out of perceived uncertainties concerning future experience. A theory, in essence, is a system for anticipation

(Popper, 1968:32; Lundberg, 1964; Meehan, 1968; Bridgeman, 1959; Dubin, 1969:5-9; Lewis, 1971). In terms of the need to anticipate future occurrences, set goals and engage in "meaningful" behavior, the ability to theorize is a necessary precondition for human existence.

If we accept the premise that scientific experience is L-a posteriori in nature, then scientific theoretical systems are constructed around the task of anticipating in L-a priori uncertainty structures. In the scientific community the first order of business is not the development of propositions or formulae (in the sense in which these terms are used in the "theory construction" manuals), but rather the specification of the nature of the uncertainty itself. This leads us to the problem of description and the broader problems of re-presentational complexes. For although a theory meets experience at the "cutting edge" (see page 89), strictly speaking theory is not "about" experience, but about mechanisms for re-presenting experience--linguistic systems. Such re-presentational frameworks are the "factual windows" of the re-presentational complex.

It is the facts, as given in re-presentation, to which a theory addresses itself; reality is addressed only indirectly (this being the lesson of both logical positivism and pragmatism). Properly speaking (a point to be elaborated in the next section), what is typically termed theory

in current discussion is, in actuality a metalinguistic phenomena. This point was well made in the leading quotation of this chapter, as was expressed in Cassirer's text Language and Myth (1953a). To be meaningful it depends upon the existence of a language of a lower order. It is the role of this lower order language which is filled most systematically by re-presentational systems; Quine's "man-made fabric" (Quine, 1963:42).

Theoretical anticipatory systems: A metalinguistic formulation

As a system for the anticipation of experiences, any well defined theory can be expressed as a semantically stratified propositional system. At the lowest level, and antecedent to all other theoretical activity, is an ontologically specified re-presentational system; the M^1L anticipatory system. Consistent with our work in Chapter II, we may denote this M^1L system as Ω . This may be termed the inductive base of the theory. Operating on Ω is the M^2L anticipatory system $T(\Omega)$, which forms the inferential core of the theory. The specification of Ω is antecedent to all other theoretical activity; including the specification of M^2L systems.

The M¹L anticipatory system As the base of the theoretical structure the M¹L anticipatory system can be viewed as fulfilling three major functions; a Herderian function, an epistemic function, and an inductive function. We will briefly examine each of these.

In its Herderian function a re-presentational system is a device which allows for the "structuring and distribution of 'meaningful orientations' towards the objects of scientific inquiry." In this role they define the re-presentational capacities of those who use them and allow the study of the structure of displacements which occur in them. This last feature becomes extremely critical when we come to the analysis of "data" reduction procedures. They essentially impose constraints upon the constraints already imposed by the natural languages within which they occur.

In its epistemic function we are not so much concerned with the structuring and distribution of meaningful orientations, as we are with the orientations themselves; i.e., with the Weltanschauung they provide. For it is necessary that such systems not only contain the potentialities of the observer/describer, but also the possibilities of the phenomena they are used to describe. In this prime anticipatory function it is critical to note that re-presentational systems (and natural language re-presentations) contain both more and less (along different dimensions) than is contained

in the experiences they absorb. Less, because at the point of re-presenting some matter of experience any re-presentation will represent it incompletely. The theoretician confronts a descriptively inexhaustive reality with a finite set of means and intellectual capacities. Further, a great deal of simplification is a necessary precondition for being able to share an experience, as is the case in the descriptive act. The re-presentational system within which a researcher confronts that reality is a reflection of these constraints. More critically, however, a re-presentation contains more because, as was implied in a previous discussion, through its re-presentation the matter of immediate experience is extracted from its qualitative immediacy in the C-a posteriori and given a definitive status within a universe of factuality. This universe of factuality is the heritage of L-a posteriori knowledge, regardless of the re-presentational framework within which it occurs. In re-presentational systems it is only made more definitive.

The aim of theoretical thinking, . . . , is primarily to deliver the contents of sensory or intuitive experience from the isolation in which they originally occur. It causes these contents to transcend their narrow limits, combines them with others, compares them, and concatenates them in a definitive order, in an all-inclusive context. It proceeds "discursively", in that it treats the immediate content only as a point of departure, from which it can run the whole gamut of impressions in various directions, until these impressions are fitted together into one unified conception, one closed system. In this system

there are no more isolated points; all its members are reciprocally related, refer to one another, illumine and explain each other. Thus, every separate event is ensnared as it were, by invisible threads of thought, that bind it to the whole. The theoretical significance which it receives lies in the fact that it is stamped with the character of this totality (Cassirer, 1953b:32).

This brings us to the inductive function of re-presentational systems and requires the specification of some further notions. At the interface of a re-presentational system, say Ω , and the real world it seeks to describe is a relation of admissibility. An experience is said to be admissible in Ω if it is possible to construct a representation of it in Ω . An admissible experience is said to actualize Ω . Such actualizations are the grist of Ω -based induction activities and signal the first step in the inductive process. Since not all experiences, past, present or future, are considered to be actualizations of Ω , those which are considered to be its actualization may be said to constitute its empirical domain; a domain which they enter by decision. It is this point of decision which gives the inductive process its nonlogical and nearly mystical nature.

Relatedly, every admission signifies the occupation of some point or cell in the M^1L anticipatory system and any admissible experience (or sequence of experiences) marks the partitioning of the system into two classes; occupied and

empty cells. Experiences which come to occupy the same cell may be said to be Ω -equivalent. Any sequence of experiences is said to distribute itself in the system. Through the notions of admissibility, occupation, Ω -equivalent and distribution, representational systems may be said to provide a recurrence structure for experience. The possibility of recurrence marks the possibility for induction.

Inductive activity is based on the fundamental premises that, first, the inductive base Ω will be useful in the re-presentation of future experiences (i.e., there will exist experiences admissible to Ω), and secondly, that knowledge of what has occurred in Ω will be useful to the specification of what will occur in future cases of admissibility. Any system of propositions, $T(\Omega)$ which generates expectations concerning Ω -based experiences is an M^2L anticipatory system; its existence is quite literally predicated upon the existence of Ω .

In relation to the M^2L anticipatory systems we may say that Ω -based experience (as a form of L-a posteriori knowledge) makes two contributions. First they participate in the specification of such systems by providing a "fact net" (Churchman, 1971:19-41). By examining the patterns of occupation the researcher hopes to garner information relative to the specification of a hypothetically preexistent M^2L inferential core. This inferential core may be anything from

the specification of a probability distribution to rules or norms guiding described linguistic or general social action. Secondly, M^1L anticipatory systems aid in decisions regarding the viability of any M^2L anticipatory system formulated within its domain. The truth of a given proposition in the M^2L system is "contingent" upon what is true in its inductive base.

As a metalinguistic system $T(\Omega)$ takes elements of Ω as its extralinguistic substrate. As such the basic logic of the M^2L anticipatory system conforms to that of its M^1L re-presentational base (as discussed in Chapter II). Thus in a parallel manner any proposition in the M^2L system must represent a significant displacement (this is the classical application of the pragmatic principle). Those propositions in M^2L that are displaced by a given hypothesis are said to compete in Ω . Indeed, the inductive base provides the context of corroboration or falsification for any inferential core predicated upon it.

In general we can see any M^1L anticipatory system as allowing for an indefinite number of M^2L systems, although a given M^2L system would have a restricted range of M^1L anticipatory systems as its operative base. That is, an M^2L anticipatory system must in some manner, conform to its M^1L anticipatory base. The specification of the "conformance" relation, however, is dependent upon the

specification of the three layers of ontology and is beyond the scope of this dissertation.

Two theoretical systems are said to be in ontological conflict if they operate in distinguishable M^1L anticipatory systems. Such conflict is generally not resolvable by strictly empirical or logical means. It represents what Hans Reichenbach (1938:9-16) has termed a volitional bifurcation (see also page 7). Usually, for a given area of research, a particular ontological stance will dominate (in well-defined sciences) by convention (Kuhn, 1974). If and when a competing ontology comes to supersede a previously accepted M^1L system, then as Kuhn has noted, we may speak of a scientific revolution. It is important to note, however, that ontological equivalence means equivalence at all three ontological levels. Two approaches may agree at the ternary ontological level (say by viewing all dimensions as well ordered fields) but disagree at the secondary level (say, by disagreeing about what dimensions are to be included).

Two theoretical systems can only be said to be in empirical competition if they share the same M^1L anticipatory system and have divergent M^2L anticipatory systems. In other words, given $T_i(\Omega_m)$ and $T_j(\Omega_n)$, to say that T_i competes with T_j is to say that $\Omega_m = \Omega_n$. It is only under the condition of equivalence in the M^1L anticipatory system that

"critical experiments" can be carried out. If an experience is both admissible to Ω and subject to an M^2L anticipatory system, say $T_i(\Omega)$, that experience is said to be a realization of that M^2L system.

An actualization may be said to be the least unit of inductive interest while the realization is the least unit of inference. A realization may be said to contain information about the M^2L system and seems to be the integrative core of all inferential systems; ethnographic or statistical. For instance, when the ethnolinguist collects some corpus of linguistic data he assumes that each piece of data incorporates information concerning the grammar which generated it; i.e., it is a realization of the grammatical system. Similarly, in statistical analysis¹ we say that we

¹It is in statistical analysis that semantic stratification finds its most formal specification. Statistical techniques and tests are centered around the specification of probability distributions. But probability (an exceedingly enigmatic entity) can only be "distributed" into an a priori available re-presentational system. Thus probabilist William Feller notes:

Any theory necessarily involves idealizations, and our first idealization concerns the possible outcomes of an "experiment" or "observation". If we want to construct an abstract model, we must at the onset reach a decision about what constitutes a possible outcome of the (idealized) experiment (Feller, 1968:8).

Sociologists have long underplayed the importance of representation systems, often reporting the results of their "observations" in terms of correlations, slope coefficients, etc. Yet this overlooks the fact that these are estimators used for the specification of probability distributions

have obtained a "sample", this is equivalent to saying that we have obtained n realizations of n equivalent stochastic processes. This reformulation, in fact, may be preferential to the concept of sample since it shows that the sample is indeed the culmination of a sequence of n decisions concerning the extent to which a given experience is a realization of some common (or equivalent) stochastic process(es). It is this common inferential core which allows us to use the n realizations to extract information about the inferential system itself. In general an inferential core can be applied to any experience which realizes it. There is no reason why the empirical domain of any theory should be considered finite.

Ω -modification and reduction processes

Related to the specification of the M^1L anticipatory system is the notion of Ω -modification. The process of Ω -modification essentially involves the transformation of the given M^1L anticipatory system Ω into another system, say Ω^* . A particularly interesting type of Ω -modification procedure is Ω -reduction or "data" reduction. Relative to

and probability must be attached to something. Sociologists must take a more theoretical glance at statistics. If they do they will find that statistics do not merely provide "tool" "tools" for testing hypothesis or theories, but are in fact very rich theories in and of themselves. Much of what has been termed the "gap between theory and research", is really a gap between theories.

a given base Ω , any data modification procedure could be considered a reduction if the transformation it produces also results in a reduction of the power of Ω . An important point to remember is that any type of transformation must take a re-presentational system into a re-presentational system. The validity of displacement must be preserved in any such if the resultant system is to be considered a re-presentational system. The initial ontological structure may change but the validity of the kernel ontology must remain invariant.

The intent of this dissertation is not to make an exhaustive study of reduction procedures. However, before passing on to other topics we might note two possible forms which reduction procedures might take. The first are deletion procedures. Procedures considered as such would be cellular deletion and dimensional deletion. Relatedly, in the broader context of modification, we may see increases in the power of Ω as by dimensional or cellular augmentation. Such modifications (deletions and/or augmentations) could occur for a variety of reasons. For instance, a researcher may start with a tentatively indeterminate M^1L system in the belief that both an M^1L and an M^2L system exist but remain to be specified. Hence, upon exposure to some sequence of admissible experiences the strains of application may necessitate such modifications. Analysis techniques

differentiate as to the extent to which they allow modifications of this nature.

The second class of reduction procedures would include those procedures which impose an indifference structure¹ on Ω through the use (implicit or explicit) of disjunctive descriptive forms (see pages 136-138). This is by far the most common form of reduction procedure. More definitively, a reduction procedure may be said to impose an indifference structure on Ω if and only if that procedure takes Ω into another system Ω^* such that

1. If m^* is the power of Ω^* and m is the power of Ω , then $m^* < m$,
2. Each cellular component of Ω^* , say $\omega_i^* (i=1,2,\dots,m^*)$ can be expressed as a disjunctive sequence of cells in Ω , say $\omega_j (j=1,2,\dots,m)$; thus, having the form

$$\omega_i^* \equiv \bigvee_{r=1}^k \omega_j^{(r)} \quad k < m (\text{i.e., } \omega_i^* \text{ is factual})$$

and

3. An expression of total indifference in Ω^* , when

¹It is necessary to distinguish between two forms of indifference; re-presentational, which we are considering here, and effectual indifference as would be illustrated by economic studies of substitutability of commodities. It is important to note, however, the re-presentational indifference automatically produces effectual indifference.

put in its expanded Ω form, gives an expression of total indifference in Ω .

The essence of the third condition is that Ω^* partitions Ω into m^* mutually exclusive classes of expressions. Examples of common techniques which impose indifference structures on initial M^1L anticipatory systems are rates, ratios, and composites. Each form imposes its unique kind of indifference structure. Their nature and displacement properties, however, have not adequately studied in the sociological community. Other techniques imposing logically (but not intuitively) equivalent forms of indifference structures would include those which indifference structures within dimensions (such as the imposition of age, income or population categories).

Since we have not dealt with the nature of the ternary ontological level, it would be advantageous to mention it here. The ternary ontological layer is essentially concerned with the structure of comparability among incompatible expressions in an M^1L anticipatory system. Examples of comparability are ordered classes, metricity or continuity¹

¹Throughout this manuscript I have implicitly dealt with finite, discrete re-presentation systems. This is primarily because I feel such systems have almost universal use in the sociological community. "Continuity of nature" postulates, however, assert that between comparable forms there always exist intermediates. Transformed into re-presentational systems, this postulate necessitates indefinite constructability. It in no way, however, invalidates the basic concepts we have been developing here.

in the M^1L system. The two major concepts are "comparability relations" and "comparability under concatenation". Under given comparability structures any string in the M^1L system, by virtue of its propositional nature and somewhat independently of its effective dimensionality, may be compared to any string in its complement (compared as in, "greater than" or "distance from"). Now, in relation to reduction procedures we might note that some procedures which produce indifference in Ω , thus, transforming it to some other M^1L system Ω^* , often create such indifference structures to induce comparability. In other words power is sacrificed for comparability. Rates and ratios (such as velocity express exactly this property. Almost all "dimensional combination procedures" in the physical sciences strive towards this goal of increased comparability (Bridge-man, 1922; Krantz et al., 1971:454-544; Weitzenhoffer, 1951:387-406).

Since the notion of "reduction by indifference" is a rather abstract one it may be helpful to illustrate its meaning in the use of a data reduction procedure familiar to most behavioral scientists; the use of simple composites. Other than linear modeling techniques, there are few research practices which are as pervasive as the use of composites. Such techniques are generally said to "summarize the results" or, more exotically, to capture the multi-

dimensional "essence" of the "concept", or "underlying factors", they are said to "tap". Though I find myself critical of "automatic" composite usage (i.e., without concern for consequences or as a tradition), to generalize against it usage seems unwise for there are many settings (particularly in dealing with cardinal valued variables) in which the technique does have value. Therefore, we shall simply study a couple of simple composite generated indifference structures and suggest some rules which might be useful in any reduction procedure.

Consider a situation in which we are given n dimensions, each of power five; i.e.,

$$\Omega_1 \equiv (\alpha_{i1}, \alpha_{i2}, \dots, \alpha_{i5})$$

for all values of $i=1,2,\dots,n$. We now desire to use a composite to take our n dimensional space, $\Omega = \Omega_1 \times \Omega_2 \times \dots \times \Omega_n$, into a one dimensional space Ω^* . A description in the initial space Ω would have the form

$$\omega_1 \equiv (\alpha_{i1}, \alpha_{2j}, \dots, \alpha_{nk}) \quad i=1,2,\dots,P(\Omega)$$

while a description in Ω^* would have the form

$$\omega_j^* \equiv \bigvee_{r=1}^k \omega_j^{(r)} \quad j=1,2,\dots,P(\Omega^*), \quad k < P(\Omega) \quad .$$

Table 3.1 gives the relative powers (given above as $P(\Omega)$ and

Table 3.1. Power reductions generated by composite transformations

No. of Dimensions	$P(\Omega)$	$P(\Omega^*)$
1	5	5
2	25	9
3	125	13
4	625	17
5	3,125	21
6	15,625	25
7	390,625	29
8	1,953,125	33
9	17,578,125	37
10	87,890,605	41
.	.	.
.	.	.
n	5^n	$4n+1$

$P(\Omega^*)$) of the initial and transformed re-presentational systems. Table 3.2 displays the structure of indifference as generated for a two dimensional Ω , while Table 3.3 gives a display for a three dimensional Ω .

To make these figures significant the reader might consider an interpretation in which a respondent is given a questionnaire composed of n five point Likert style items. Here the power of Ω gives the number of distinct questionnaires the respondent can return. Hence, for 10 items the respondent could generate nearly 90 million different questionnaires. The researcher then codes questionnaire and

Table 3.2. A composite generated indifference structure in two dimensions

ω^*	$k \quad (r)$ $V \quad \omega$ $r=1 \quad j$	k^a
2	(1,1)	1
3	(1,2)V(2,1)	2
4	(1,3)V(3,1)V(2,2)	3
5	(1,4)V(4,1)V(2,3)V(3,2)	4
6	(1,5)V(5,1)V(2,4)V(4,2)V(3,3)	5
7	(2,5)V(5,2)V(3,4)V(4,3)	4
8	(3,5)V(5,3)V(4,4)	3
9	(4,5)V(5,4)	2
10	(5,5)	1
Total		25 = P(Ω)

^aThe task of specifying the nature of the indifference structure for higher values of dimensionality would obviously be a tedious task. Similarly the task of determining the breadth of indifference (i.e., the value of k) for a given value in the range of the composite would also be formidable. For instance, we might like to ask the number of ways in which one can obtain a "score" of 20 for 10 Likert style items. I believe a solution to this problem is within reach, however, if the basic question is reformulated into the terms of a classical occupancy problem. Under this reconceptualization we consider each item as a cell into which balls can be placed. Thus, for 10 items we have ten cells. We are now given 20 balls which we are to distribute into the 10 cells under the restriction that no cell is to remain empty and the number of balls placed in a given cell is not to exceed five. This is not a simple occupancy problem, however, and its solution exceeds my competencies at this point. It is a point of further research. For an introductory treatment of occupancy and related combinatorial problems, see Feller (1968). For a more advanced (and difficult) treatment, see Riordan (1967).

Table 3.3. A composite generated indifference structure in three dimensions

ω^*	$V_{r=1}^k \omega_1^{(r)}$	k
3	[(1,1,1)]	1
4	[(1,1,2)V(1,2,1)V(2,1,1)]	3
5	[(1,1,3)V(1,3,1)V(3,1,1)]V[(2,2,1)V(2,1,2)V(1,3,3)]	6
6	[(1,1,4)V(1,4,1)V(4,1,1)]V[(3,2,1)V(3,1,2)V(2,3,1)V(2,1,3)V(1,2,3)]V[(2,2,2)]	10
7	[(1,1,5)V(1,5,1)V(5,1,1)]V[(3,3,1)V(3,1,3)V(1,3,3)]V[(2,2,3)V(2,3,2)V(3,2,2)]V[(4,2,1)V(4,1,2)V(2,4,1)V(2,1,4)V(1,4,2)V(1,2,4)]	15
8	[(2,2,4)V(2,4,2)V(4,2,2)]V[(3,3,2)V(3,2,3)V(2,3,3)]V[(5,2,1)V(5,1,2)V(2,1,5)V(2,5,1)V(1,5,2)V(1,2,5)]V[(4,3,1)V(4,1,3)V(3,4,1)V(3,1,4)V(1,4,3)V(1,3,4)]	18
9	[(2,2,5)V(2,5,2)V(5,2,2)]V[(4,4,1)V(4,1,4)V(1,4,4)]V[(5,3,1)V(5,1,3)V(3,5,1)V(3,1,5)V(1,5,3)V(1,3,5)]V[(4,3,2)V(4,2,3)V(3,4,2)V(3,2,4)V(2,4,3)V(2,3,4)]V[(3,3,3)]	19
10	[(4,4,2)V(4,2,4)V(2,4,4)]V[(3,3,4)V(3,4,3)V(4,3,3)]V[(5,4,1)V(4,5,1)V(4,1,5)V(1,5,4)V(1,4,5)]V[(5,3,2)V(5,2,3)V(3,5,2)V(3,2,5)V(2,5,3)V(2,3,5)]	18
11	[(5,5,1)V(5,1,5)V(1,5,5)]V[(3,3,5)V(3,5,3)V(5,3,3)]V[(4,4,3)V(4,3,4)V(3,4,4)]V[(5,4,2)V(5,2,4)V(4,5,2)V(4,2,5)V(2,5,4)V(2,4,5)]	15
12	[(5,5,2)V(5,2,5)V(2,5,5)]V[(5,4,3)V(5,2,4)V(4,5,3)V(4,3,5)V(3,5,4)V(3,4,5)]V[(4,4,4)]	10
13	[(5,5,3)V(5,3,5)V(3,5,5)]V[(4,4,5)V(4,5,4)V(5,4,4)]	6
14	[(5,5,4)V(5,4,5)V(4,5,5)]	3
15	[(5,5,5)]	1
Total		125 = P(Ω)

forms a composite "score". With 10 items he is now able to discriminate among 41 different questionnaires. The reduction of power, from 90 million to 41 does seem appreciable. Under this interpretation, Tables 3.2 and 3.3 give the indifference structures generated for two and three items respectively.

I think a key question, and an obvious one, is what would lead a researcher to display such indifference? Is the kernel ontological belief maintainable under such an indifference structure. For instance, from Table 3.3, if a researcher re-presents some sociological phenomena by a value of 9, is the displacement of a value of 8 really significant? What displacement in the semantic substrate is represented by the displacement of 8 by 9? How about the displacement of 7 by 9, or even 1 by 9?¹ And since an

¹Observe closely the ordered triplets which compose the indifference form defining each composite value in Table 3.3. Note that composites are indifferent to all permutations and some combinations of dimensional values. Thus (5,3,1) and (1,3,5) both yield a "score" of 9. Consider now the use of the Euclidean distance as an indicator of similarity. Computing the distance for the two triplets given above we get a value of 5.65. But the similarity of (5,3,1) and (1,1,1) is given by 4.24. Hence, under this measure of similarity, the point (1,1,1) is more similar to (5,3,1) than is the point (1,3,5). Yet the latter two points receive a representation of 9 under the composite (i.e., they are treated as re-presentationally equivalent) while (1,1,1) is given the value 3. Similarly the similarity of (4,3,1) and (5,3,1) is given by 1.0 (the smallest possible distance in the integer format). Yet the former receives a value of 8 which implies it is less similar to the point (5,3,1) than is the point (1,3,5). I leave it to the reader to determine the conditions under which such considerations would be ignored.

experience only comes to occupy a cell in Ω^* by means of the occupation of a cell in Ω , if we define some sort of comparability structure on Ω^* , what are the implications of this for the structure of comparability in Ω ? For instance, if in Ω we judge $8 > 7$, then can we say $(5,2,1) > (1,3,3)$? These and other similar questions must be confronted in any attempt at reduction. The imposition of any indifference structure should not be imposed arbitrarily. The key to any scientific endeavor is to be able to represent the rich variety it confronts in its area of inquiry. To reduce that variety through reduction processes is a most serious endeavor.

These questions and considerations, however, lead us to the following general guidelines for the specification and/or modification of re-presentational systems. The first of these guidelines involves the adoption of the general strategy developed throughout this dissertation; i.e., to consider one's self as a key component in a broader re-presentational complex (the sociological community) in which one's task is the acquisition, and redistribution of experience. Adopting this strategy means first developing the ability to place one's self in the conceptual intersection portrayed in Figure 1.2 (page 50). From this general standpoint one can begin to ask meaningful questions concerning the re-presentational adequacy of a given re-presentational

framework.

To specify the nature of these questions we may begin with a re-presentational framework Ω' defined by the collection of cellular components $\omega_1^i, \omega_2^i, \dots, \omega_m^i$. The collection Ω' may be a re-presentational framework generated by questionnaire responses (wherein an arbitrary ω_i^i would be a possible response to a sequence of K items); a framework generated by imposing an indifference structure on a preexistent re-presentational system; or it may be some system which remains to be specified.

Now, in accordance with the pragmatic principles discussed in Chapter II (especially on pages 146-149), the first order of business becomes that of establishing the validity of the variously possible displacements. That is, if through a given act of description, ω_i^i comes to displace ω_j^i (through the selection of ω_i^i as a representation for the particular experience), then that displacement should have some empirical or factual significance as well. The displacement must be factual as well as linguistic. Thus, if through a composite, say, we represent a particular experience by a 28 rather than a 29, we should be able to believe that a score of 28 stands for one cognitively discernable state of affairs while 29 stands for another.

Moving into the more general setting once again we must seek to specify the organization of the displacements.

In essence this means the specification of the dimensionality and the structure of comparability as well. The questions raised about the composite on pages 173 and 174 adequately portray the general nature of inquiry at this level.

Another factor affecting the "meaningfulness" of a given re-presentational framework stems from the consideration of the nature of the "parties to the act." An important case for consideration here is that involved in applied research situations where displacements occurring within a re-presentational framework must not only be "factually significant", but "practically significant" as well. That is knowledge produced through the use of a given re-presentational system must be significant in terms of a user's activity as well. The existence of such knowledge must be a difference in terms of the user's behavior. If it does not (or cannot) the displacements generated in the re-presentational framework are practically insignificant; even if they are factually significant. Factual significance may be considered a necessary but not sufficient condition for practical significance. Perhaps it would be wise to draw a distinction between "applied research" and "applicable research."

In conclusion it must be noted that there are no cut-and-dried procedures for evaluating the re-presentational

adequacy of a given re-presentational framework or a particular reduction procedure. One cannot legislate against all uses of composites, nor say that all rates or ratios are somehow a priori valid. The questions are not all that easy nor the answers that obvious. The key strategy comes from an acquired ability to evaluate re-presentational frameworks in terms of their core function--the communication (re-presentation) of experiences. Thus, if there is any single guide to decisions concerning the specification (or adequacy) of a given re-presentational framework, or the use of reduction procedures, it should be that the primary task of the researcher is to bring acquired experiences back to the scientific community in as clear and meaningful a manner as is possible. The researcher's commitment is not to the "measurement of variables", but to the portrayal of empirical variety. If a case can be made for the use of composite patterns such as those given above, then that case should be made. Indeed, it is our obligation to make that case--to specify the validity of displacements occurring within such a framework. If it cannot be done our re-presentational framework does not qualify as a re-presentational system and higher order theoretical activity cannot justifiably use it as an inductive base.

Summary and Conclusions

This dissertation is decomposable into two major sections. The first section dealt with the sociology of language and was written to establish a vantage point from which the central problem of description might be viewed. Through this initial section three objectives were pursued. First, I sought to develop a conceptual platform in terms of which we could inquire into the nature of our language institutions and their role in the context of society. Secondly, I expressed the belief that by understanding the language institutions, students of the methodology of sociology might acquire a more realistic feeling for the role of language in the scientific community and realize that a basic functional isomorphy exists between language use patterns in both social contexts. Thirdly, I wished to develop a framework within which the problem of description could be usefully formulated.

The second major section of this dissertation was essentially organized around this reformulation. In this section the problem of description was embedded into the social context by reformulating it in terms of the problem of "re-presenting" experiences which found their original "presentation" to those for whom the experience was not cognitively available. In terms of this perspective the

sociological community was viewed as a system for the acquisition, construction, and redistribution of L-a posteriori forms of knowledge. Such L-a posteriori forms were noted to be the least form of scientific experience and it was asserted that much of the evolution of the scientific enterprise could be viewed as an adjustment to this fact.

It was pointed out that the problem of description was a methodologically integrative place to begin. This was said to be so for two reasons. First, because the problem of description was one which confronted all approaches to empirically based sociological knowledge, and secondly, because by studying the problem of description in its social context we found that there was a core ontological structure which adheres in all acts of description; regardless of "surface" ontological divergences. Chapter II was primarily oriented towards the analysis of this core ontological structure and its implications for the existence of the Cartesian environments of acts of description. Here a semiformal analysis of the descriptive act led us to formulate the concepts of displacement, kernel ontology, vacuousness and ideal complement. Some basic combinatorics in such ideal systems were also examined as well as the pragmatic requirements engendered by the specification of re-presentational systems. Some general concepts

in "indifference" were also introduced in Chapter II.

Chapter III was offered as a very exploratory application of the developed concepts of two areas of interest to students of the methodology of sociology; theory and data reduction. Theory, as it is currently discussed was viewed as a metalinguistic phenomena, an "inferential core", which was built on, and contingent upon, a lower order "inductive base". The inductive base is a representational system. Reduction procedures were viewed as being of two types; "deletion" procedures and those procedures which impose an "indifference structure" on the inductive base. An illustration was given in terms of the indifference structure generated by a simple composite.

In conclusion, I must first reaffirm what is already obvious. This is a "preliminary study". A more thorough study must strike harder at the points at which the various tools at the sociologist's disposal seem to show basic kinship. I do believe, however, that all ontological stances, qualitative, quantitative, ethnomethodological, etc., must gravitate toward the use of re-presentational systems. This is not merely because it is "scientific" to do so, but because of the collective nature of the sociological community as a re-presentational complex (or, as Holzner, 1968:60-71, would call it--an "epistemic community"). Science, it seems, tends to impose a more Herderian set of constraints upon

those who claim membership in the scientific community. This it has done by the elimination of "accidental differences" in its propositional systems, by the clarification of displacement structures in its language, and by the "perfection" of what Schutz (1973) termed the "idealization of the interchangeability of standpoints" and the "idealization of the congruence of the system of relevances". In other words it strives toward "observer equivalence" (Holzner, 1968).

The use of re-presentational systems, as explications of what is already linguistically available, are means to this end; the elimination of pragmatic (personal) effects in communication (Cherry, 1970:219-257). Re-presentational systems are essentially devices for the structuring and distribution of "meaningful orientations" towards certain empirical domains. They are the evolutionary products of the task that has been given the members of the scientific system. They must be put into perspective however.

In the first place, the communications which occur through the use of re-presentational systems compose only a small portion of the communication which flows through the scientific community. Indeed, as the various elements of the scientific community have come to rest on more and more stable inductive bases, a greater and greater portion of dialogue comes to concern the specification of the

higher order theoretical systems. Although this has already happened in sociology, I do not believe we are ready for such complacency in the sociological community. In the second place such systems must continue to be subjected to evolutionary forces. We must adopt research strategies which allow the "real world" to "object" to the "pictures we draw of it". As I said earlier, such systems are not meant to simply contain the potentialities of the user, but also the possibilities of that which he seeks to describe. Like language in general, these symbolic systems must be allowed to change through the strains of application. Thirdly, the use of re-presentational systems should not be confused with any kind of "standardization" of descriptive systems. Their construction and specific form must be given by the creativity of the user. The only demand is that they be available in such a manner that displacements within them can be subjected to analysis. The variety of such systems, as produced by innovation, is also a key evolutionary force for our discipline.

Beyond these points, there remains much to be accomplished. First, what has been developed here in preliminary form must be made more precise and rigorous. Secondly, it must be applied in a number of settings. One point of application, in particular, is to the study of the problems which respondents encounter when they attempt to

use our re-presentational systems to describe the experiences to which they have privy. More studies must also be made of a wider range of data reduction procedures and their natures specified. Thirdly, the ternary ontological layer remains to be specified. Here academic areas such as abstract algebra and topology can be of great utility. I believe that sociology must begin to make stronger demands of, and stimulate more development in, the mathematical sciences. Finally, there is the issue of descriptive efficiency which tends beyond that of descriptive effectiveness. The constraints of time and cost must be incorporated. For instance, when a researcher must record what he experiences in an ongoing social action system, he must be able to find systems which allow him to spend a maximum amount of time in observation and a minimum amount of time in documentation. In conjunction to this last point it would be useful to consider the implications of "Zipf's Law" (Cherry, 1970:103-108).

As much as remains to be accomplished, I do feel that several things were accomplished which mark a set of unique contributions to the sociology of language and the methodology of sociology. With respect to the sociology of language I hope that my work on the concept of the "collective representation" might stimulate further research into this potentially critical area. My work on the notion of the

descriptive act provides an important starting point for such research. Further it provides a starting point which I feel is consistent with Durkheim's original theoretical intent. By demonstrating the manner in which the descriptive act can be embedded within a larger set of Herderian constraints, I feel I have also made an inroad into an empirically relevant specification of the analytical relationship which obtains between a society (as a reality sui generis) and the actors which comprise it.

In terms of the methodology of sociology I believe a number of contributions should be apparent. At the technical level I offered a meaningful reconceptualization of the concept of the "negation of a proposition" (pages 127-129) which both sustains the validity of the laws of contradiction and the excluded middle, yet clarifies the role of negation (or denial) in multivalued logics. Much criticism of the validity of the above mentioned laws comes from the confusion of the negation of a proposition with the ideal complement of that proposition. My metalinguistic reformulation overcomes this confusion. Also at the technical level, I believe my treatment of "data" reduction procedures provides a unique and valuable mode of evaluating such procedures; especially those employing "indifference structures."

Relatedly, but at a more general level, I feel that

the general concept of viewing the sociological community as a re-presentational complex within which we participate provides a unique vantage point from which many difficult methodological questions can be reevaluated. The problems of re-presentation and reduction are only starting points for analysis. Analysis at these points, however, has far-reaching consequences for other forms of research activity, such as theoretical specification.

Sociology is a young and vital discipline. It will play a vital role in the shaping of our global enterprise as it can begin to come to grips with some of its more serious problems. I believe the problem of description is at the head of the list. To come to grips with this problem we must approach it as sociologists.

There is a whole science which must be formed, a complex science which can advance but slowly and by collective labor, and to which the present work brings some fragmentary contributions in the nature of an attempt (Durkheim, 1965:33).

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ACKNOWLEDGMENTS

The construction of a dissertation requires the existence of a supportive intellectual environment; one which encourages earnest thought and, hopefully, meaningful creativity. A number of people have been responsible for the existence of such an environment throughout my graduate career at Iowa State University.

A great deal of thanks must go to my major professors, Dr. Richard D. Warren and Dr. Charles L. Mulford. Both have allowed me the latitude and "room for thought" which such an endeavor requires. And both were supportive when ideas were less than clear and concepts less than explicit.

Appreciation must also be extended to other members of my graduate committee. Dr. Gerald Klonglan has provided many an intellectual stimulus which lead to the formation of this thesis. Dr. Les Wilcox has made innumerable contributions to the development of my thought; both as the major professor on my Master's thesis and as current committee member. I have long since lost track of the hours spent in valued discussion in his office. I must also extend my thanks to Dr. Roy Hickman. In the course of my explorations into the realm of statistical thought he provided a good deal of direction and understanding. I must also gratefully acknowledge the willingness of

Dr. Charles Wiggins to take time from his responsibilities to serve on the author's graduate committee.

Beyond the scope of my committee there are a number of people who have contributed to the direction of my thought. Included are Alex McIntosh, J. P. Kopachevsky, Don Trees and J. P. Golinvaux. This group of individuals have provided an intellectual climate, and a genuine concern for sociology, which has been very greatly appreciated. Kerry Byrnes and Joe Molnar must also be thanked for their interest in my work and willingness to discuss.

I must also extend my appreciation to the University Grants Committee whose financial support made the pursuit of this dissertation at all possible. The one year appointment that their grant afforded me, offered a luxury of thought and study not often available and has contributed strongly to both the direction of my interests and general intellectual development.

Finally, and most critically, I must recognize the vital support and encouragement offered me by my family, Jean, Sean and Aaron. Without their patience and understanding nothing could have been accomplished. Every moment writing has competed with moments I could have spent with my family. There have been many such moments.

APPENDIX: SYMBOLS USED

Symbol	Interpretation
$A \subset B$	A is a <u>subset</u> of B
$A \cup B$	The <u>union</u> of A and B. (An element is a member of the union of the sets A and B if and only if that element is a member of A or a member of B, or both.)
$A \cap B$	The <u>intersection</u> of A and B. (An element is a member of the intersection of the sets A and B if and only if that element is a member of A <u>and</u> is also a member of B.)
$\bigcup_{i=1}^k A_i$	$A_1 \cup A_2 \cup \dots \cup A_k$
$\bigcap_{i=1}^k A_i$	$A_1 \cap A_2 \cap \dots \cap A_k$
TP	Given a proposition P, this symbol may be read "not-P", or as the "denial of P".
$P \wedge Q$	P and Q
$P \vee Q$	P or Q, or both
$\bigwedge_{i=1}^k P_i$	$P_1 \wedge P_2 \wedge \dots \wedge P_k$
$\bigvee_{i=1}^k P_i$	$P_1 \vee P_2 \vee \dots \vee P_k$
$\sum_{i=1}^k X_i$	$X_1 + X_2 + \dots + X_k$ (the k-fold sum)
$\prod_{i=1}^k X_i$	$X_1 \cdot X_2 \cdot \dots \cdot X_k$ (the k-fold product)

$\binom{m}{n}$

Number of combinations of m things taken n at a time.